Service Manual

75SR1030 /1B /2B
75SR1040 /1A /2A

Stereo receiver

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4822 725 51073

marantz®

model SR1030 / SR1040

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PCS 79 597

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound. Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available at our National Marantz Subsidiary or Agent.

MARANTZ EUROPE B.V.
P.O. Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands
Phone : +31-40-732241
Fax : +31-40-735578

ORDERING PARTS

Parts can be ordered either by mail or by telex. In both cases, the correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which the part is required
5. Way of shipment
6. Signature: any order form or telex must be signed, otherwise such part order will be considered as null and void.

ADDRESSES

AUSTRALIA
MARANTZ AUSTRALIA
Figtree Drive
Australia Centre
Homebush, NSW 2140
AUSTRALIA

AUSTRIA
MARANTZ
Hietzinger Kai 137a
1130 Wien
Austria

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MARANTZ EUROPE B.V.
Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

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MARANTZ DIVISION OF
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Av.Santa Maria 0760
Casilla 2687
Santiago
Chile

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MARANTZ
Horsvinget 5
2630 Tastrup
Denmark

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MARANTZ
Kuortanegatan 1
00520
Helsingfors 52
Finland

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4 Rue Bernard Palissy
92600 Asnières
France

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Postfach 4802
Halle-Westfalen
Germany

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Kingsbridge House
Padbury Oaks
575-583 Bath Road
Longford Middlesex UB7 OEH,
U.K.

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ADAMCO ELECTR. SA
P.O.Box 21025
Hippocratus Str. 188
Athens 11471
Greece

ITALY
MARANTZ ITALIANA SPA
Piazza IV Novembre 3
20124 Milano
Italy

JAPAN
MARANTZ JAPAN INC.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
P.O.Box 8196
Salmiah
22052 Kuwait

NETHERLANDS
MARANTZ EUROPE B.V.
Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

NORWAY
MARANTZ
Postboks 7034
Assiden
3007 Drammen
Norway

PORTUGAL
COREL
Av. da Liberdade
211-2 Esq.
1200 Lisboa
Portugal

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia

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MARANTZ S.A.
10 Bond Street
Randburg 2194
P.O. Box 7703
Johannesburg 2000
South Africa

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MARANTZ SPAIN
Martinez Villergas 2
Apartado 2065
Madrid 28027
Spain

SWEDEN
MARANTZ
Box 1324
17125 Solna
Sweden

SWITZERLAND
MARANTZ SWITZERLAND
Postfach
8010 Zürich-Müllingen
Switzerland

TRADING
MARANTZ TRADING
P.O.Box 20008
Building SFF 2
5600 JB Eindhoven
The Netherlands

1. TECHNICAL SPECIFICATIONS (DIN)

FM TUNER SECTION

Frequency range ..... 87.5 - 108 MHz
Sensitivity DIN (Mono / Stereo) ..... 1.0 / 25 µV
S / N (Mono / Stereo) ..... 76 / 68 dB
T.H.D. ..... 0.3 / 0.6%
Selectivity at 98 MHz (±300 kHz) ..... 60 dB

MW TUNER SECTION

Frequency range ..... 531 - 1602 kHz
Sensitivity DIN (S/ N 20 dB 30% Mod. 999kHz) ..... 500 µV
S / N at 999 kHz ..... 50 dB

LW TUNER SECTION

Frequency range ..... 152 - 282 kHz
Sensitivity DIN (S / N 20 dB 30% Mod. 207 kHz) ..... 1500 µV

AMPLIFIER SECTION

Power output DIN 8 Ω ..... 50 W
RMS 8 Ω ..... 45 W
IHF Dynamic power 8 Ω / 4 Ω / 2 Ω ..... 64 W / 85 W / 92 W
T.H.D. at 8 Ω rated RMS output 0.05%
Damping factor 100
Input sensitivity : CD / TAPE / DCC / AUX ..... 220 mV / 40 kΩ
S / N (IFH-A) : CD / TAPE / DCC / AUX ..... 80 dB
POWER REQUIREMENTS
/ 2A / 2B version ..... 230 V AC, 50 / 60 Hz
/ 1A / 1B version ..... 115 / 230 V AC, 50 / 60 Hz

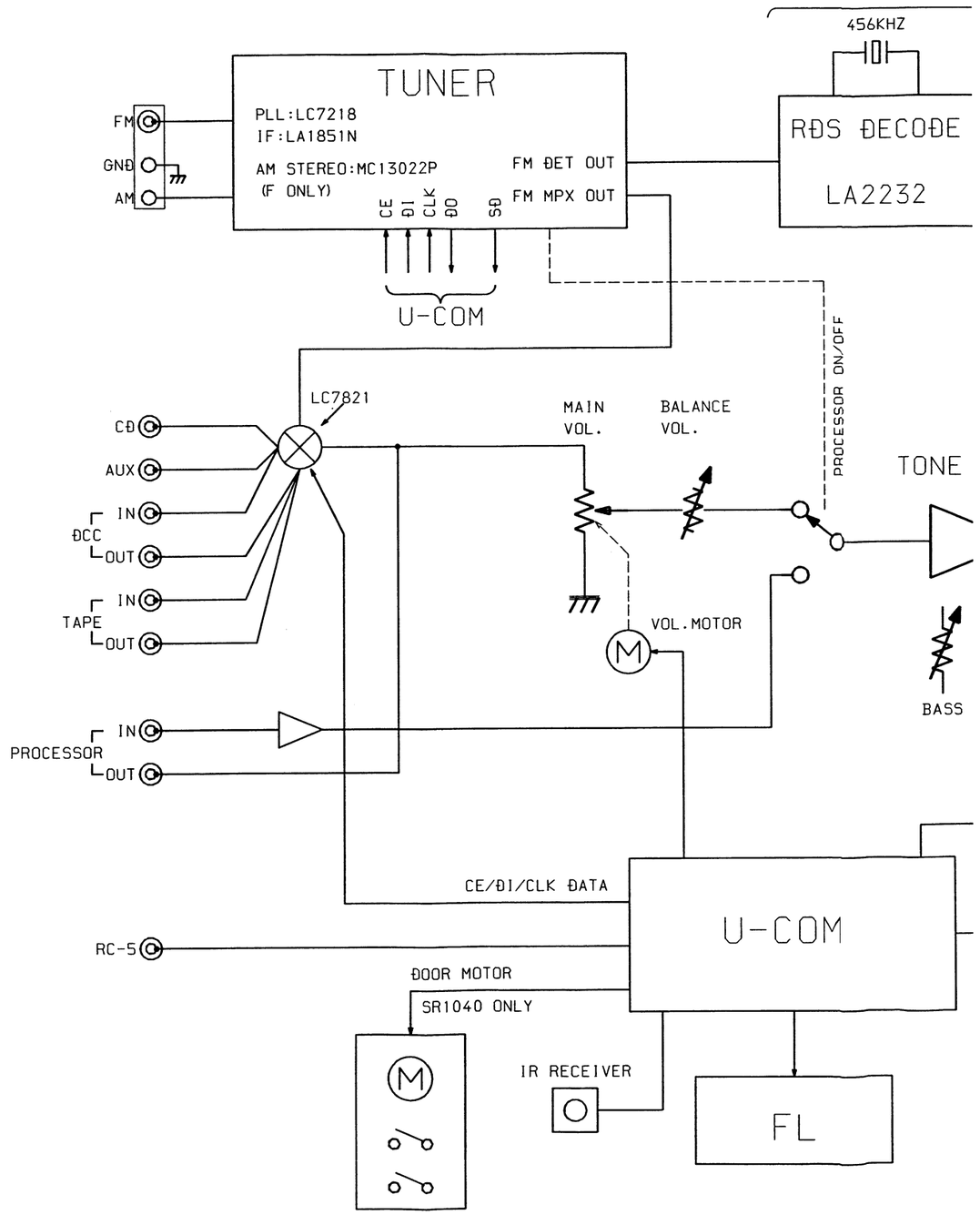
DIMENSIONS
Width ..... 422 mm
Height ..... 76 mm
Depth ..... 334 mm
WEIGHT ..... 5.9 kg (SR1030)
6.0 kg (SR1040)

SUPPLIED ACCESSORIES

Remote controller (RC1040SR) x 1
CR2032 LITHIUM Battery x 1
FM antenna x 1
AM loop antenna x 1

Specifications subject to change without prior notice.

2. BLOCK DIAGRAM



- 108 MHz
.0 / 25 µV
76 / 68 dB
0.3 / 0.6%
.....60 dB

1602 kHz
....500 µV
.....50 dB

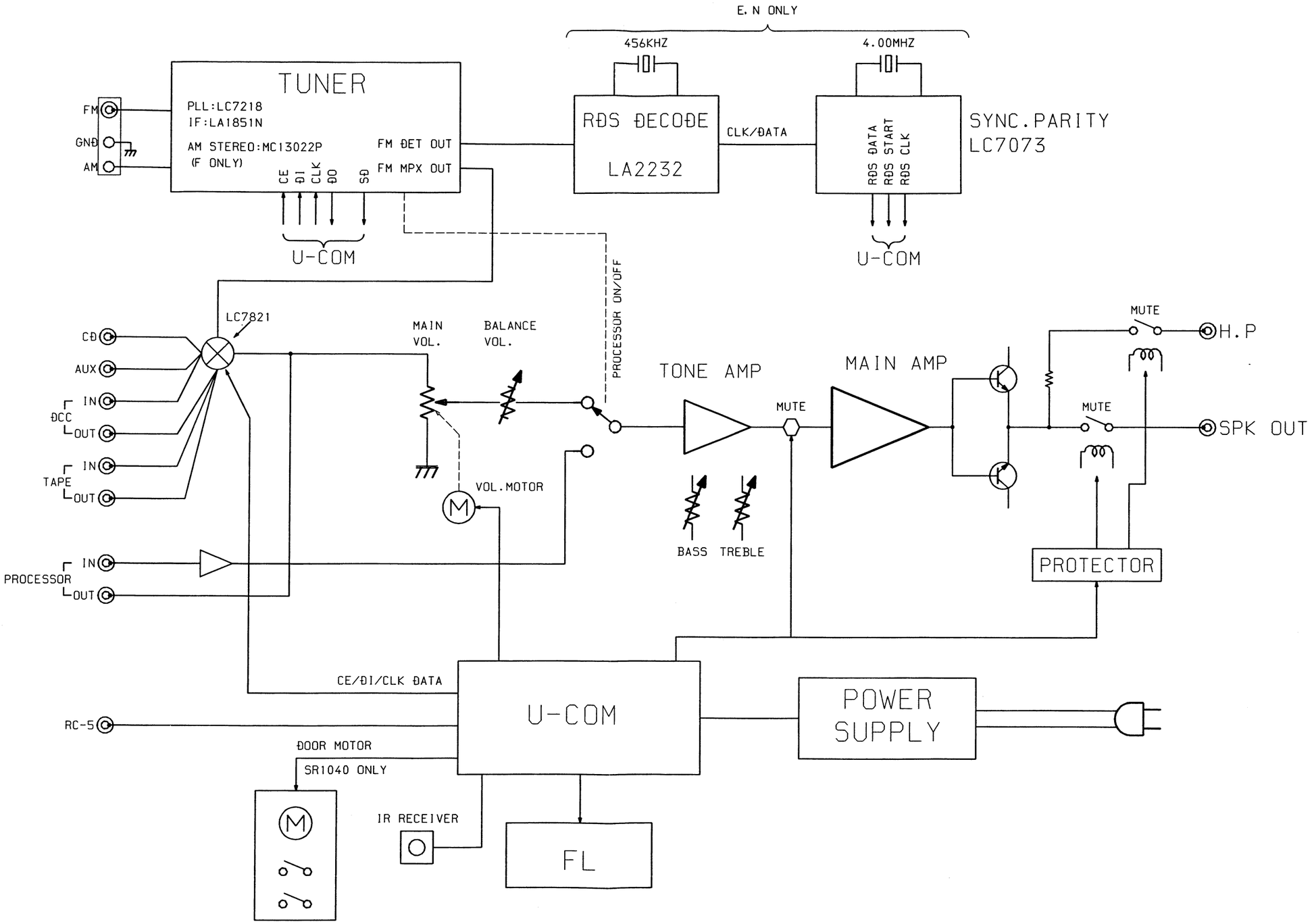
- 282 kHz
..1500 µV

.....50 W
.....45 W
W / 92 W
.....0.05%
..... 100
1V / 40 kΩ
.....80 dB

50 / 60 Hz
50 / 60 Hz

..422 mm
....76 mm
..334 mm
SR1030)
SR1040)

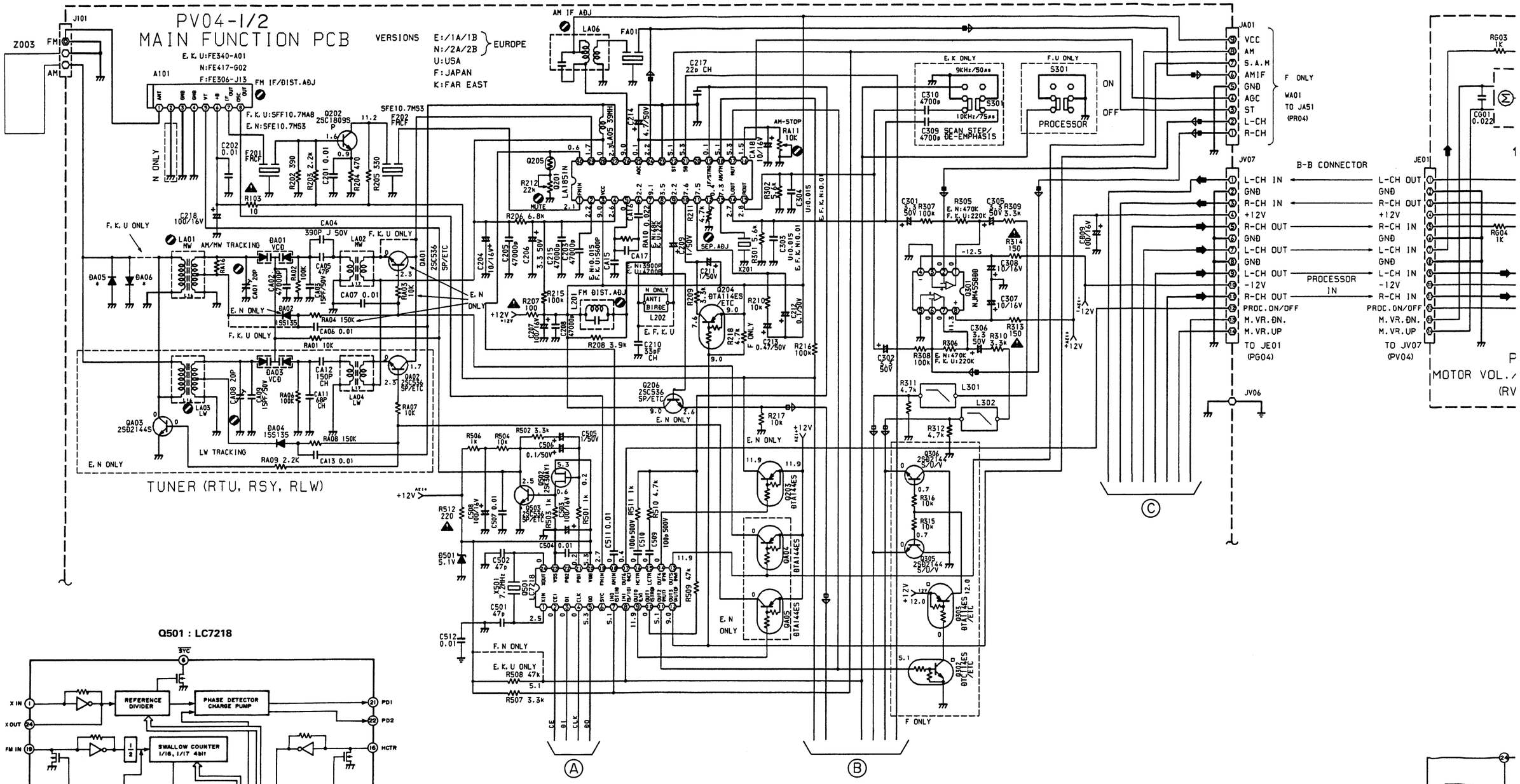
2. BLOCK DIAGRAM

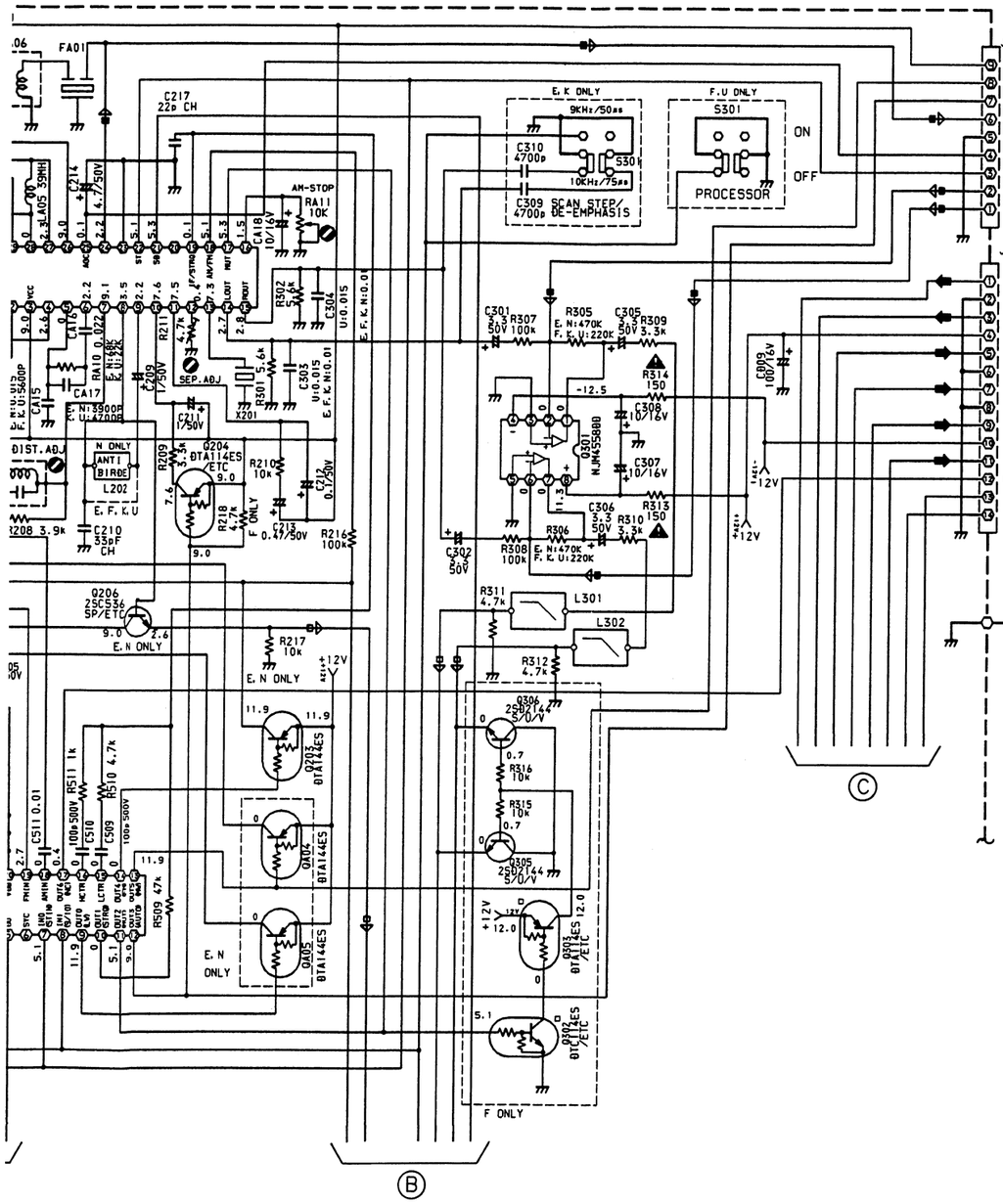


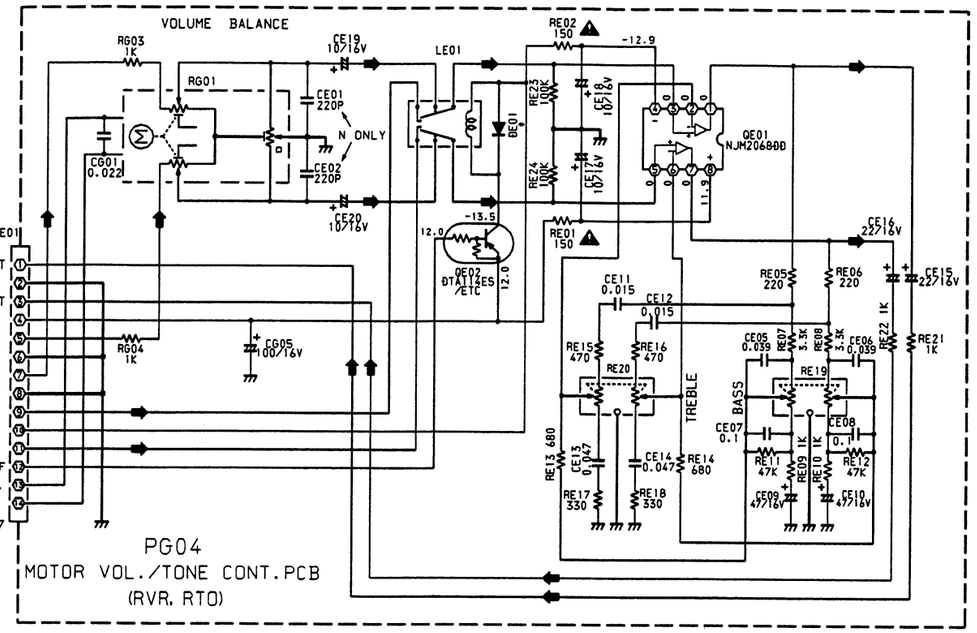
MARA-00634 / DRUCK2

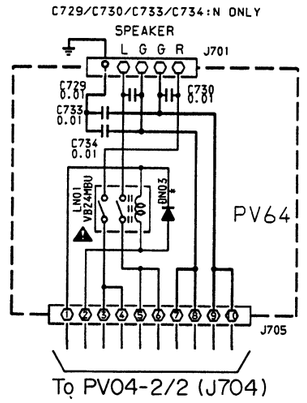
PCS 79 599

3. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern side)









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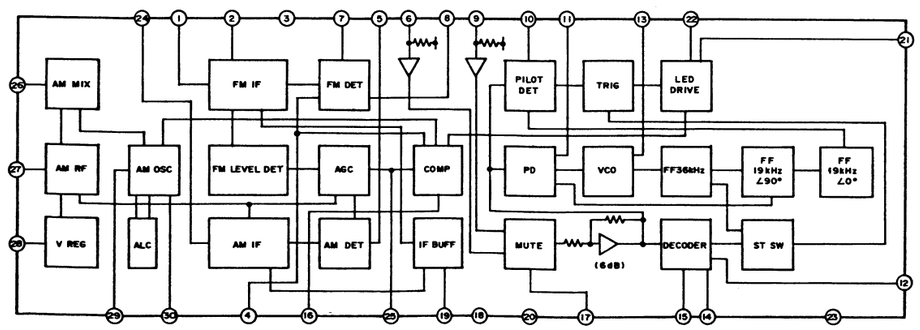
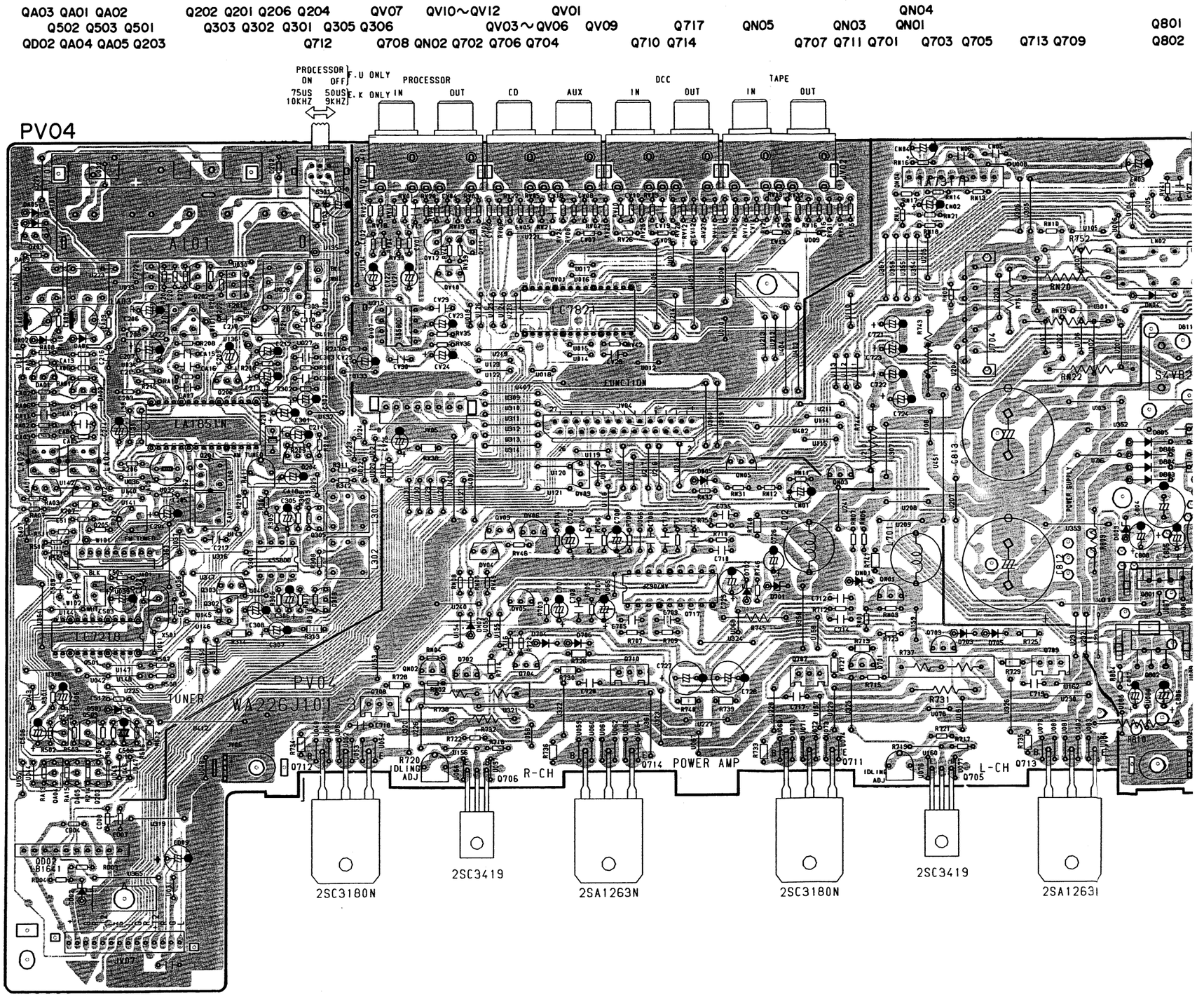
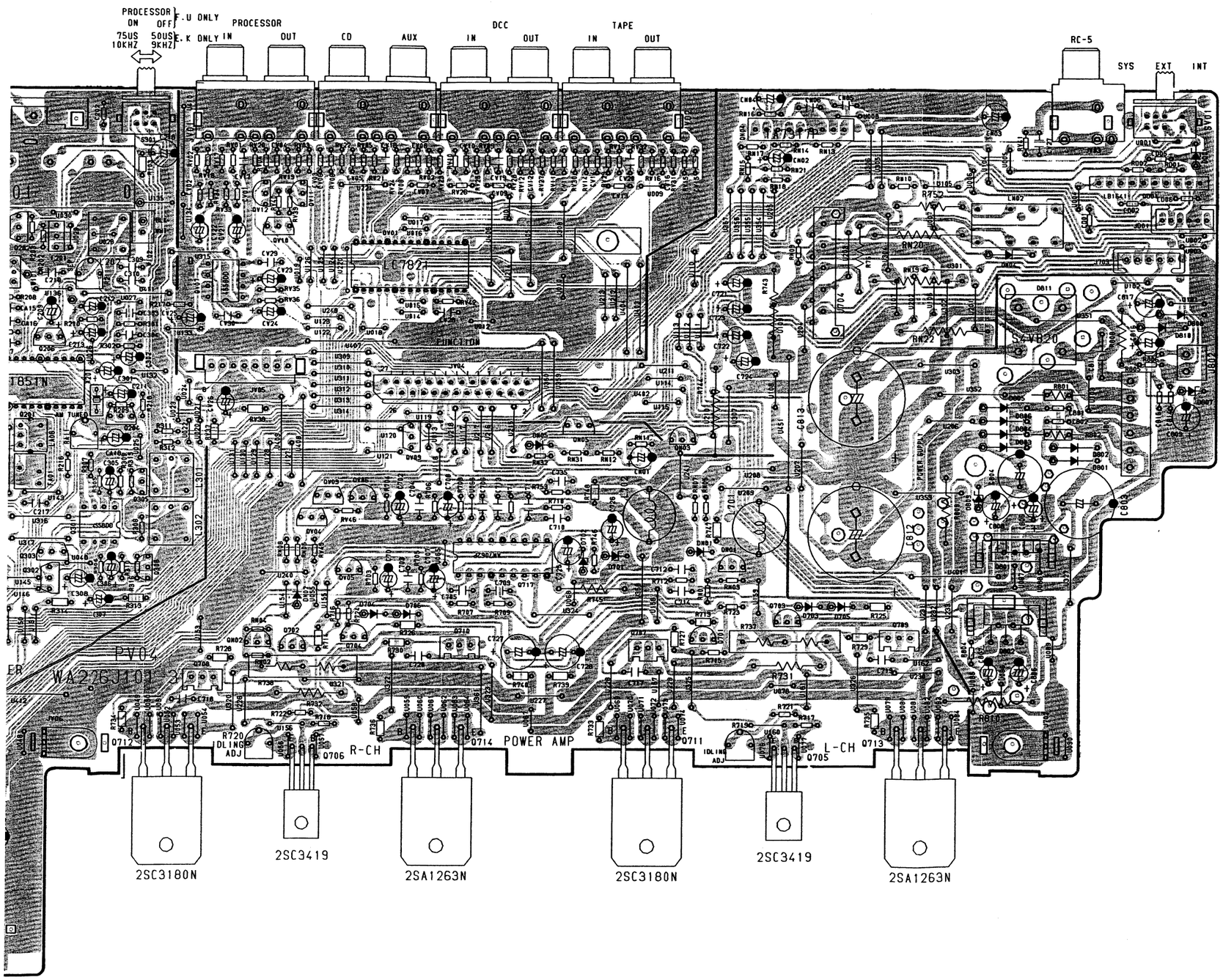


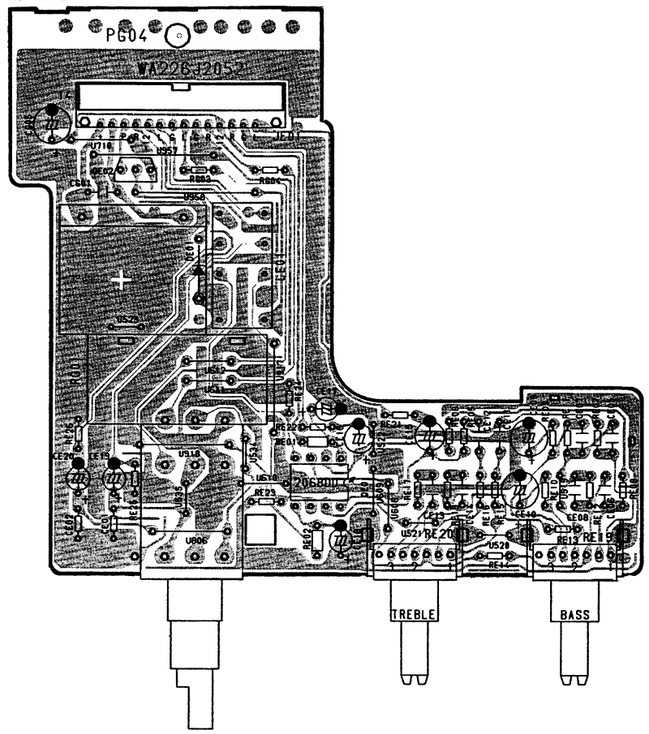

PV04
PROCESSOR
ON OFF
75US 50US
10KHZ 9KHZ
F.U ONLY
E.K ONLY
PROCESSOR
IN
OUT
CD
AUX
DCC
IN
OUT
TAPE
IN
OUT
LA1851N
LC7218
LC7821
FUNCTION
TUNER
PV04
WA226J101-3
R-CH
POWER AMP
L-CH
R720
IDLING
ADJ
2SC3180N
2SC3419
2SA1263N
2SC3180N
2SC3419
2SA1263

Q202 Q201 Q206 Q204 QV07 QV10~QV12 QV01 QN04 QD01
Q303 Q302 Q301 Q305 Q306 QV03~QV06 QV09 Q717 QN05 QN03 QN01 Q801
Q712 Q708 QN02 Q702 Q706 Q704 Q710 Q714 Q707 Q711 Q701 Q703 Q705 Q713 Q709 Q802

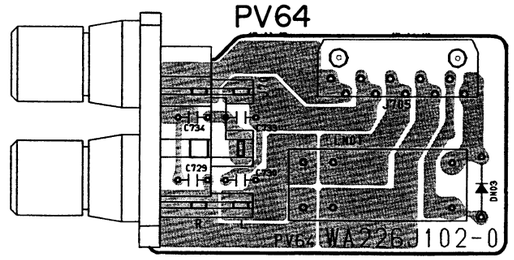
QE01



PG04

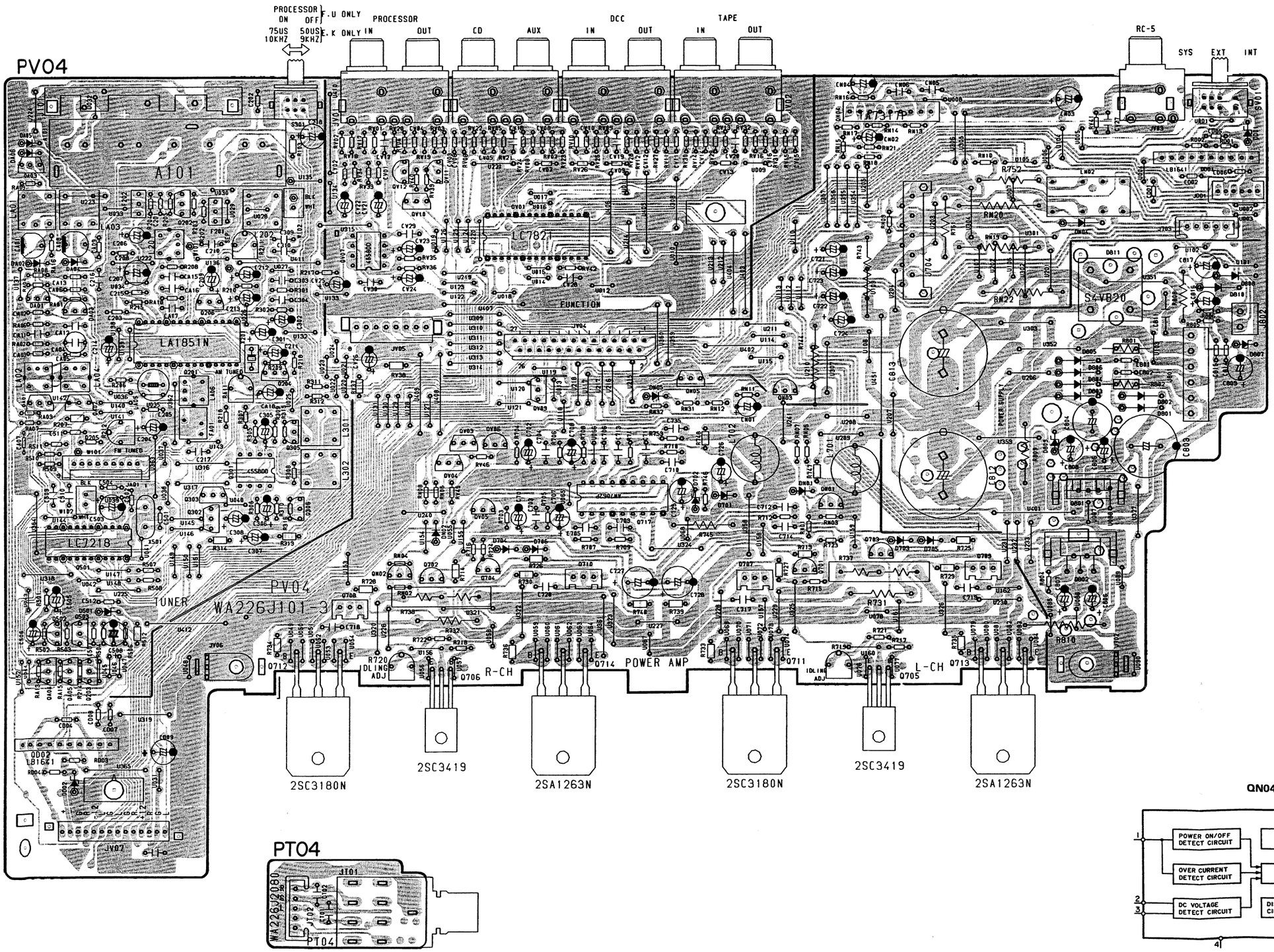


PV64



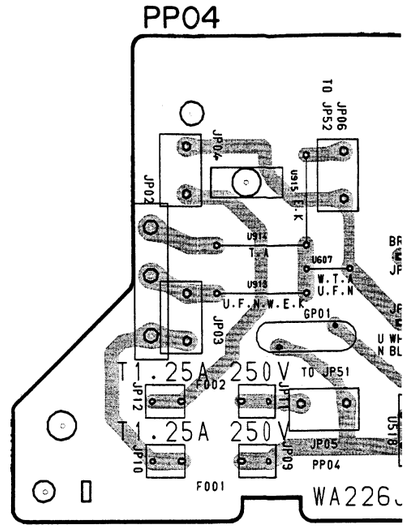
QA03 QA01 QA02 Q202 Q201 Q206 Q204 QV07 QV10～QV12 QV01 QN04 QD01
Q502 Q503 Q501 Q303 Q302 Q301 Q305 Q306 QV03～QV06 QV09 Q717 QN05 QN03 QN01 Q801
QD02 QA04 QA05 Q203 Q712 Q708 QN02 Q702 Q706 Q704 Q710 Q714 Q707 Q711 Q701 Q703 Q705 Q713 Q709 Q802

PV04



PT04

PP04



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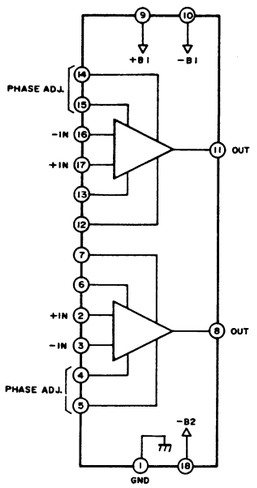
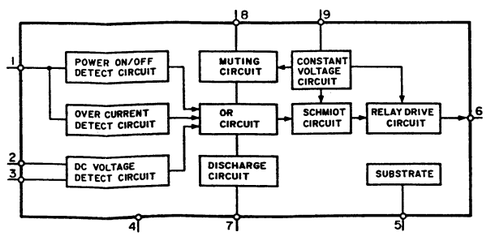
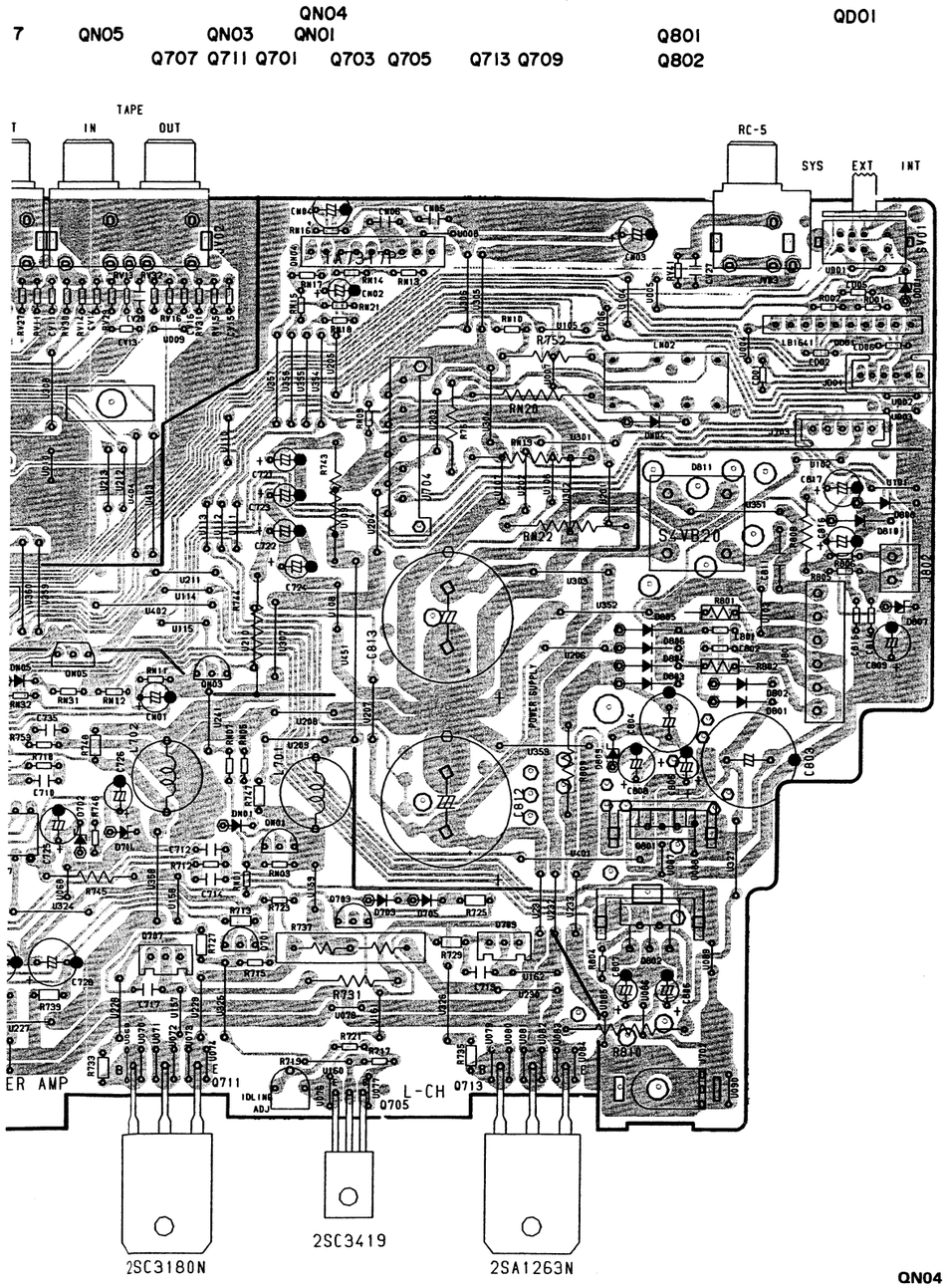


QN04 : TA7317P




QN04
QD01
7
QN05
QN03
QN01
Q801
Q707 Q711 Q701
Q703 Q705
Q713 Q709
Q802
TAPE
T
IN
OUT
RC-5
SYS
EXT
INT
TA7317P
R752
RN20
RN22
S4VB20
POWER SUPPLY
C813
C803
C787
R731
R719
R721
R732
R733
R734
R735
R736
R739
R745
R748
R758
C725
C729
C735
C716
C717
C722
C723
C724
C712
C713
C715
C718
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C720
C721
C726
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C728
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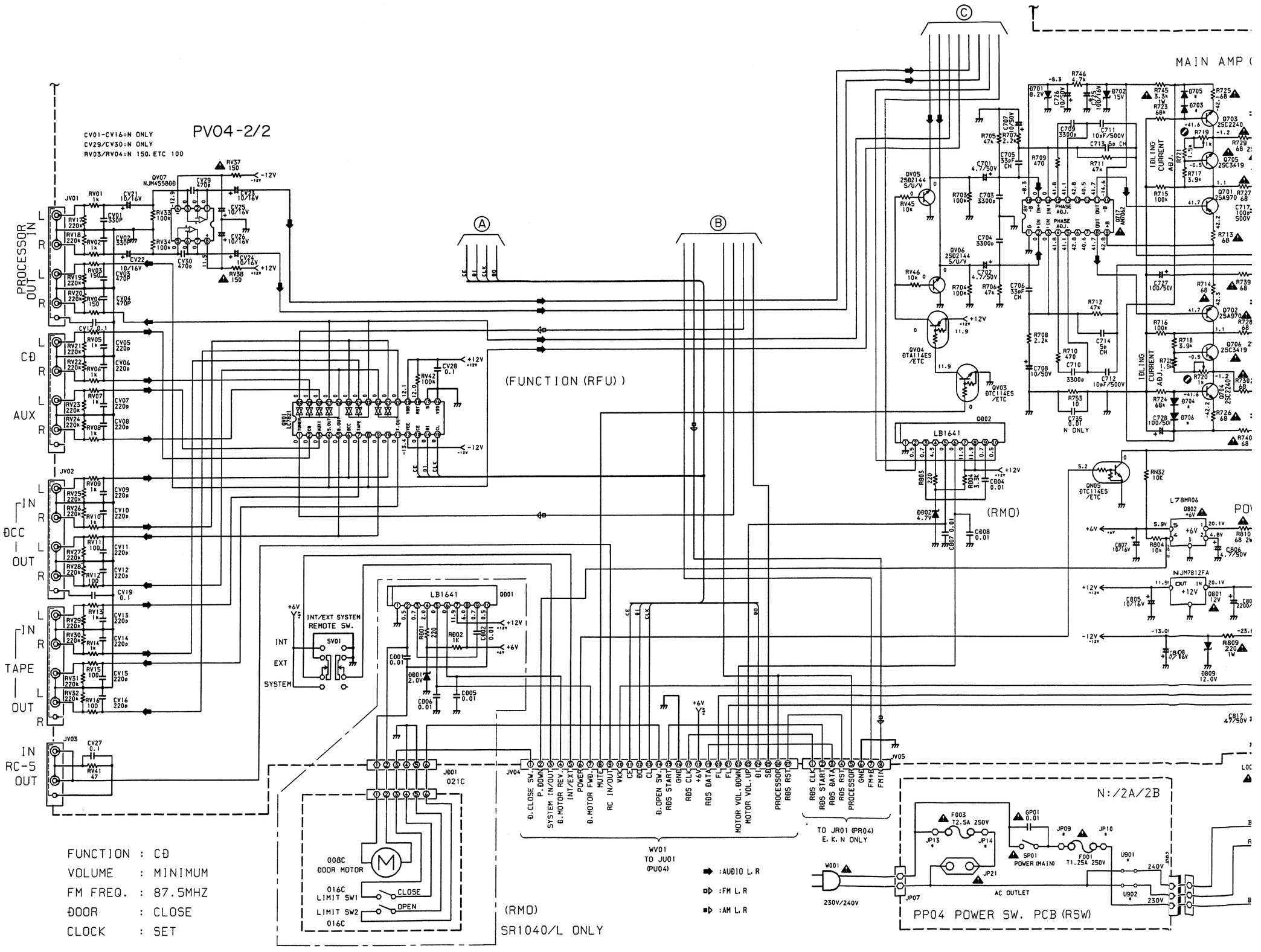
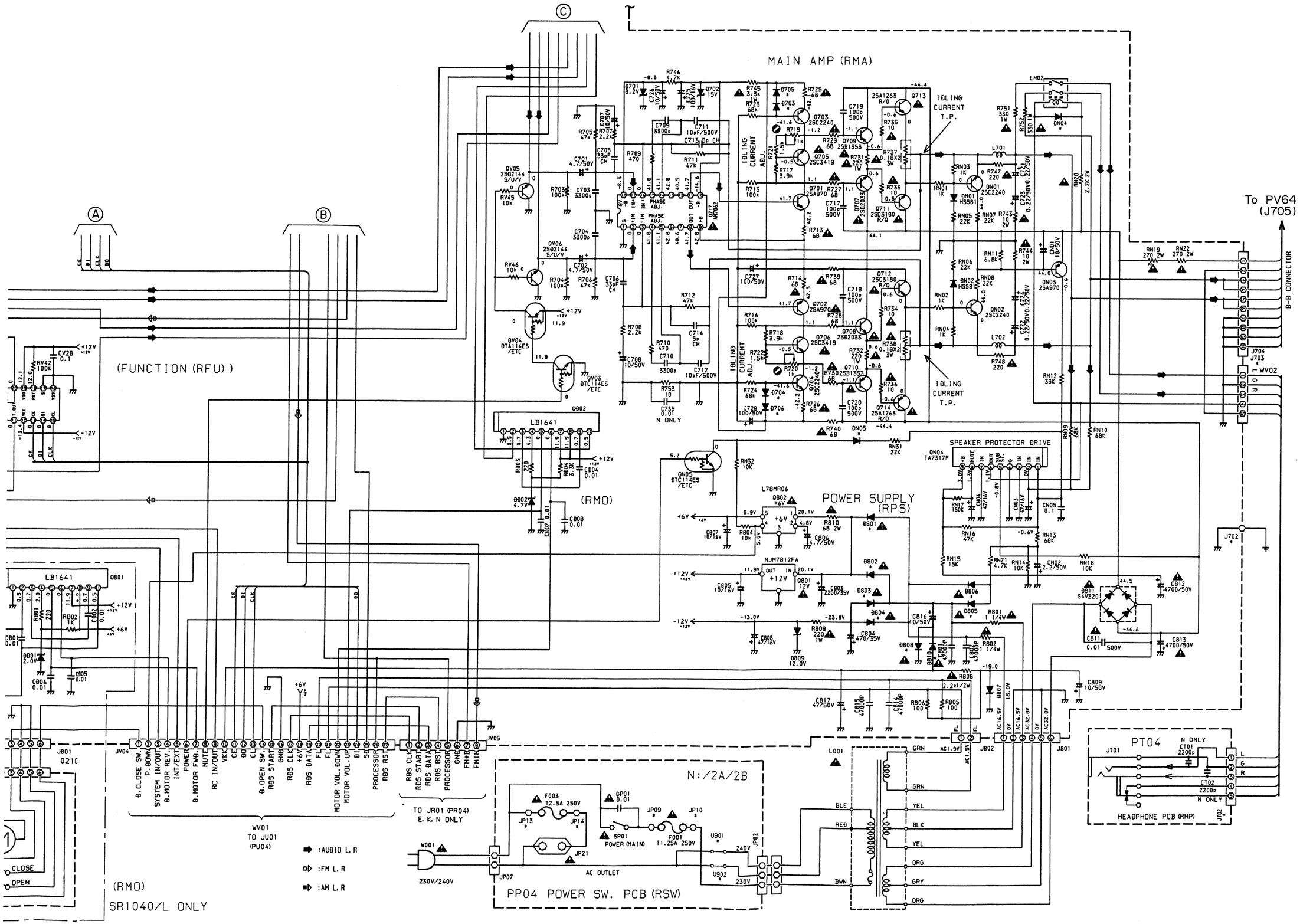
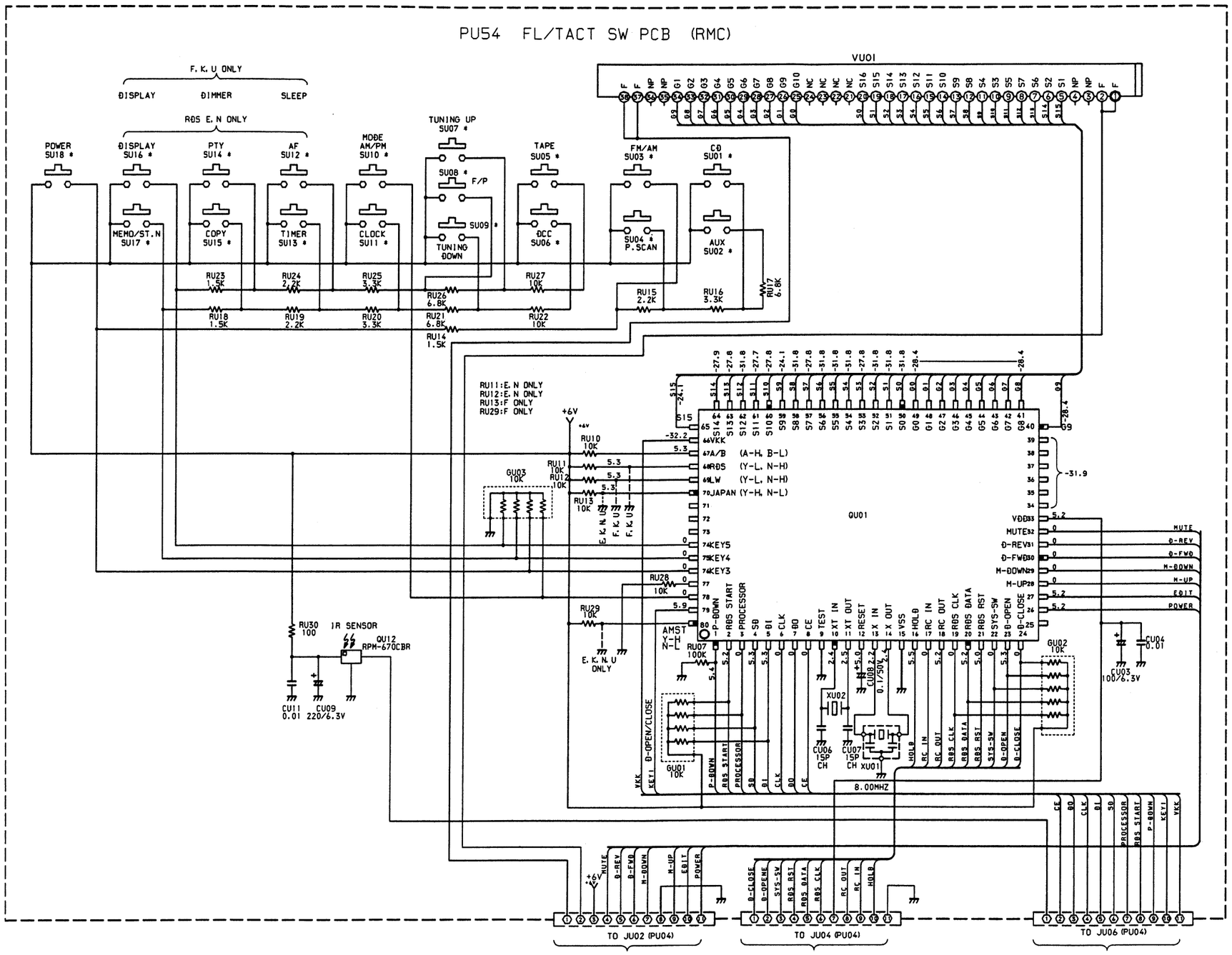
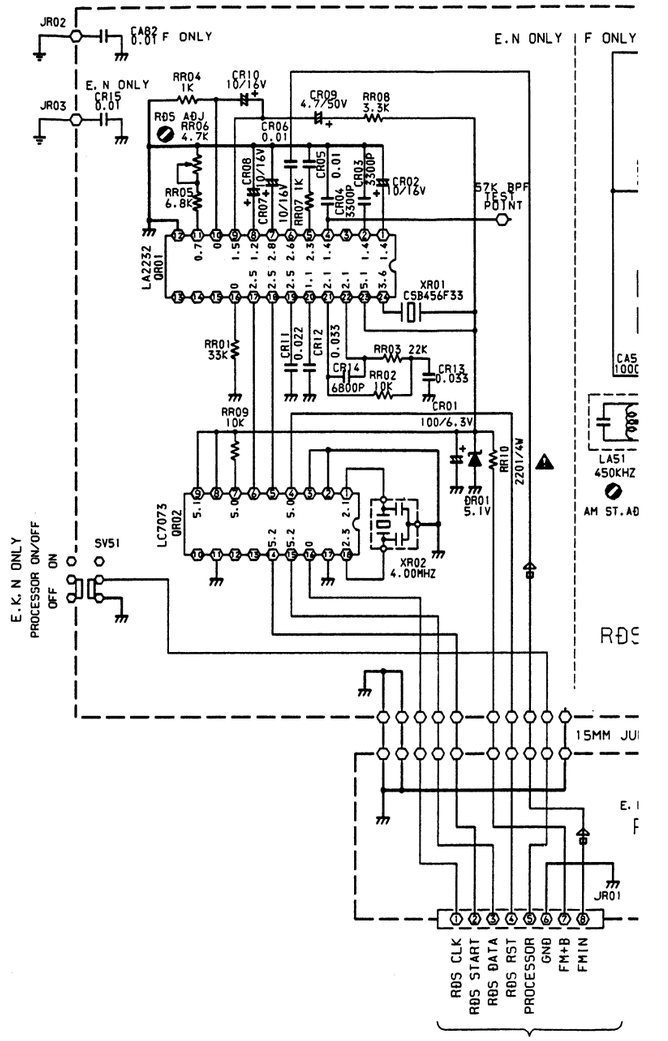
C773
C774
C775


PV04-2/2
CV01-CV16:N ONLY
CV29/CV30:N ONLY
RV03/RV04:N 150, ETC 100
PROCESSOR OUT
CD
AUX
DCC IN
OUT
TAPE IN
OUT
RC-5 IN
OUT
(FUNCTION (RFU))
MAIN AMP (
IDLING CURRENT ADJ.
PHASE ADJ.
(RMO)
L78MR06
NJM7812FA
INT/EXT SYSTEM REMOTE SW.
INT
EXT
SYSTEM
LB1641
008C DOOR MOTOR
016C LIMIT SW1
CLOSE
OPEN
LIMIT SW2
016C
(RMO)
SR1040/L ONLY
WV01 TO JU01 (PU04)
TO JR01 (PR04) E, K, N ONLY
:AUDIO L, R
:FM L, R
:AM L, R
N:/2A/2B
PP04 POWER SW. PCB (RSW)
AC OUTLET
230V/240V
FUNCTION : CD
VOLUME : MINIMUM
FM FREQ. : 87.5MHZ
DOOR : CLOSE
CLOCK : SET


MAIN AMP (RMA)
POWER SUPPLY (RPS)
(FUNCTION (RFU))
(RMO)
SR1040/L ONLY
PP04 POWER SW. PCB (RSW)
N:/2A/2B
IDLING CURRENT T.P.
IDLING CURRENT ADJ.
PHASE ADJ.
SPEAKER PROTECTOR DRIVE
To PV64 (J705)
B-B CONNECTOR
TO JR01 (PR04) E. K. N ONLY
TO JU01 (PU04)
:AUDIO L, R
:FM L, R
:AM L, R
AC OUTLET
HEADPHONE PCB (RHP)
N ONLY

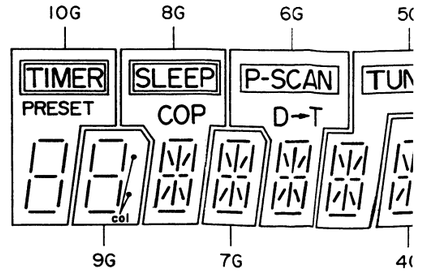


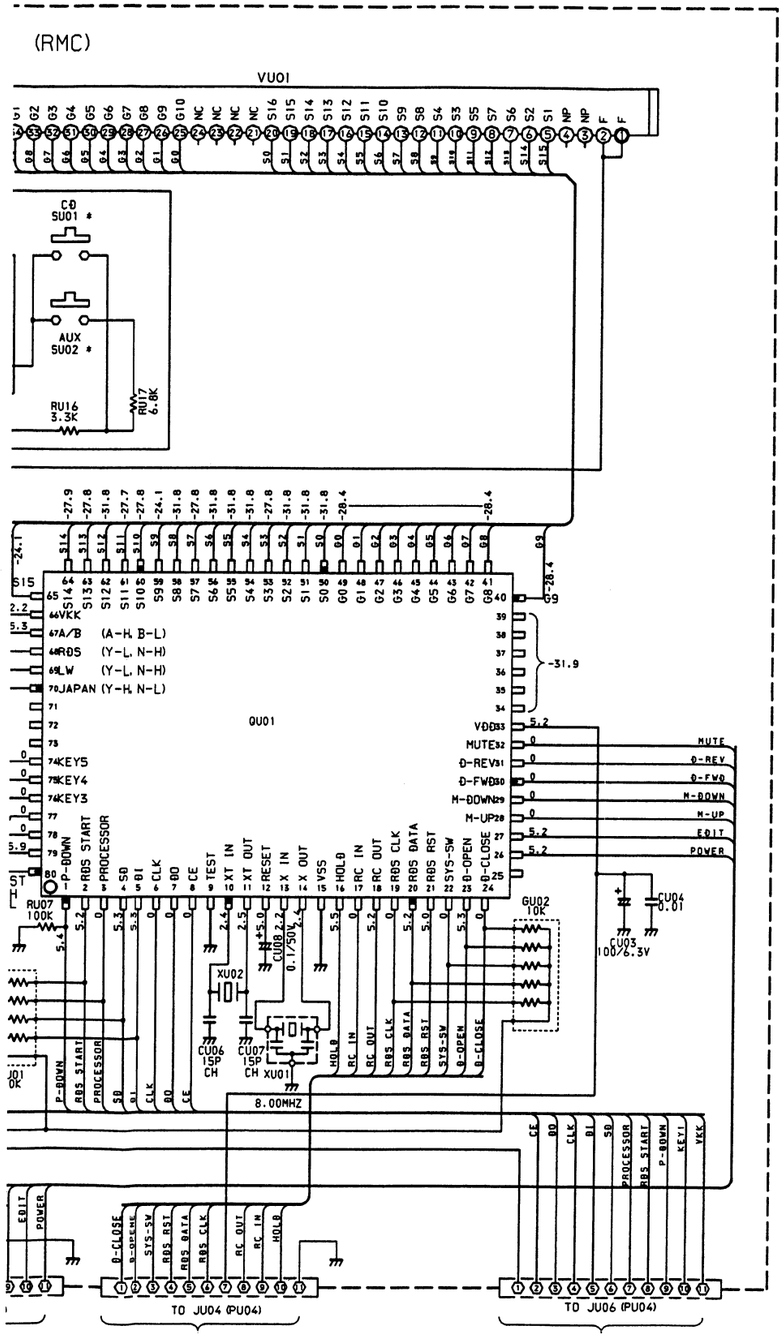


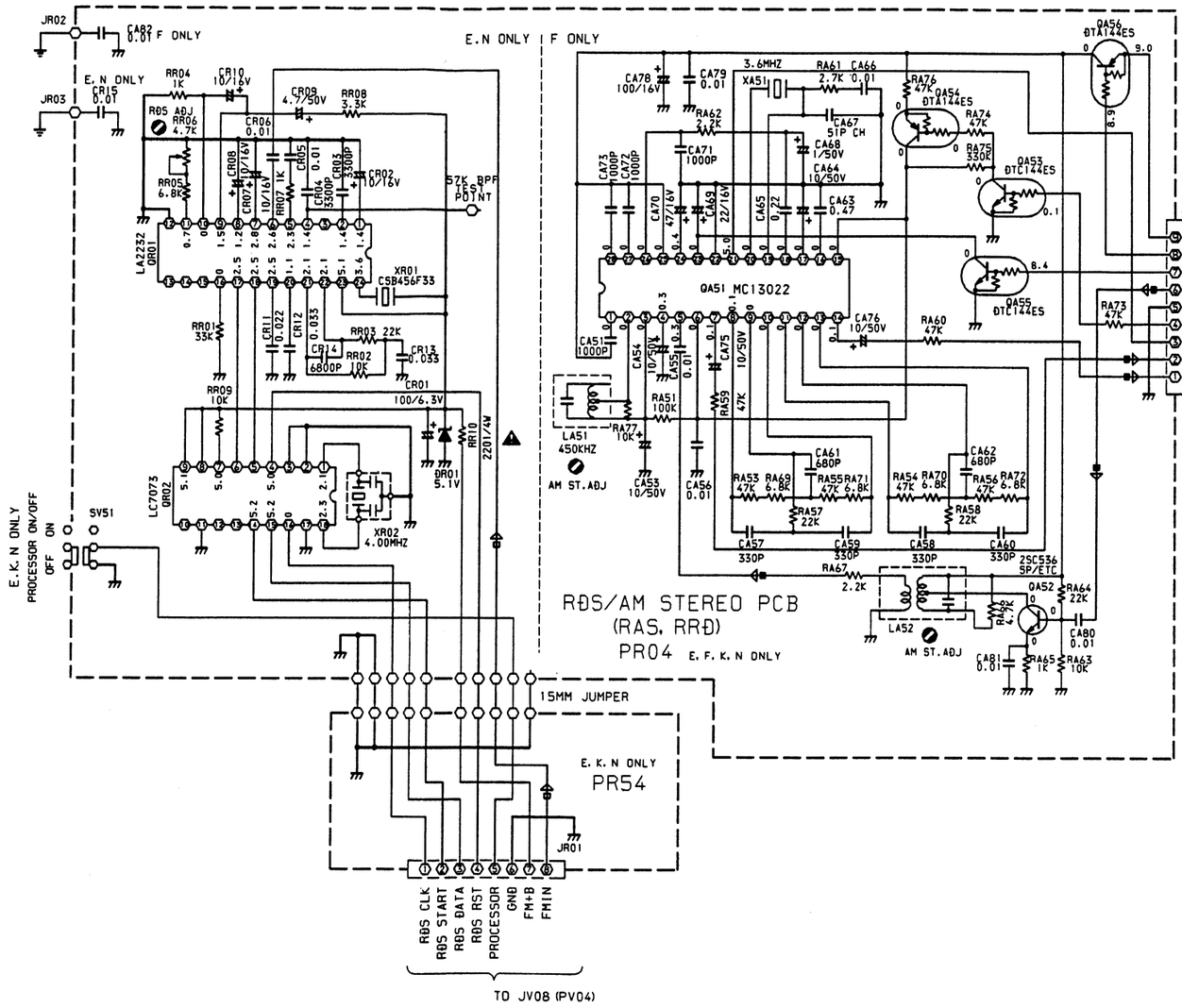
FL DISPLAY
TERMINAL CONNECTION

PIN NO.	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19
CONNECTION	F2	F2	NP	NP	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	NC	NC	NC	NC	P16	P15

NOTE 1. F1,F2 --- FILAI
2. NP ------ NO PI
3. NC ------ NO C
4. 1G~10G --- GRI
5. DL ------- DAT



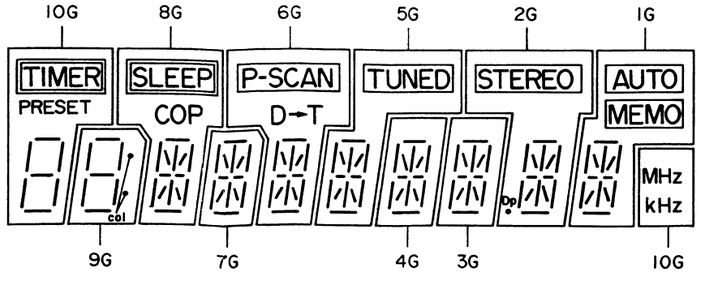




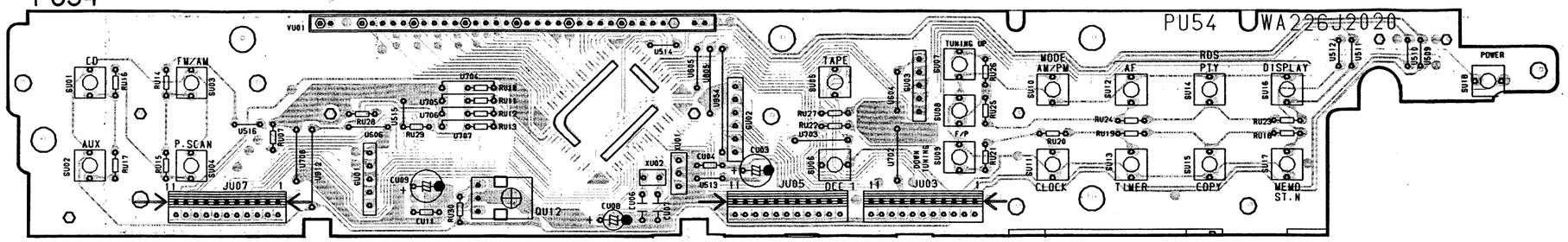
FL DISPLAY
TERMINAL CONNECTION

PIN NO.	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F2	F2	NP	NP	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	NC	NC	NC	NC	P16	P15	P14	P13	P12	P11	P10	P9	P8	P4	P3	P5	P7	P6	P2	P1	NP	NP	F1	F1

NOTE 1. F1,F2 --- FILAMENT
2. NP ------ NO PIN
3. NC ------ NO CONNECTION
4. 1G~10G --- GRID
5. DL ------- DATUM LINE

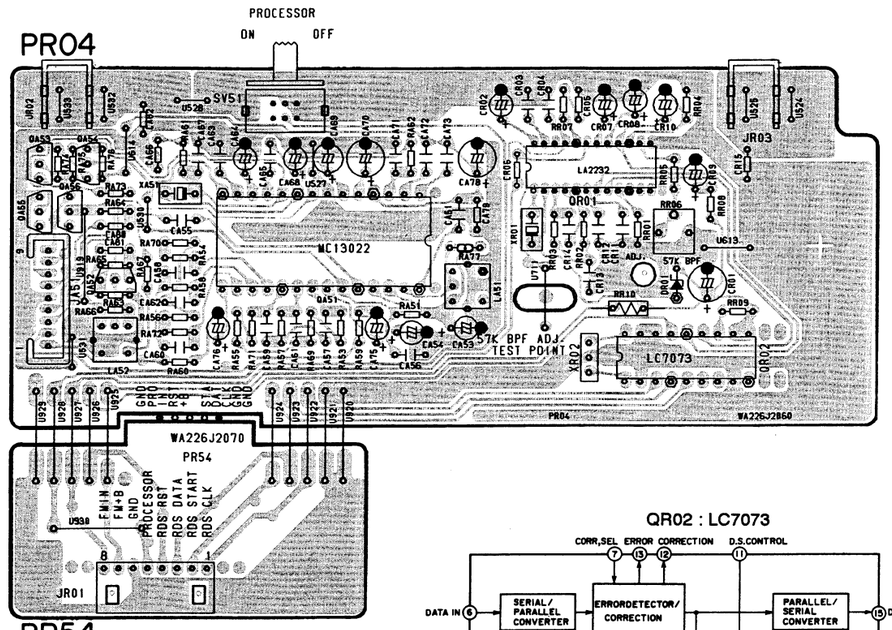


PU54



QA52～QA56　　QA51　　QR01　　QR02

PR04



PR54

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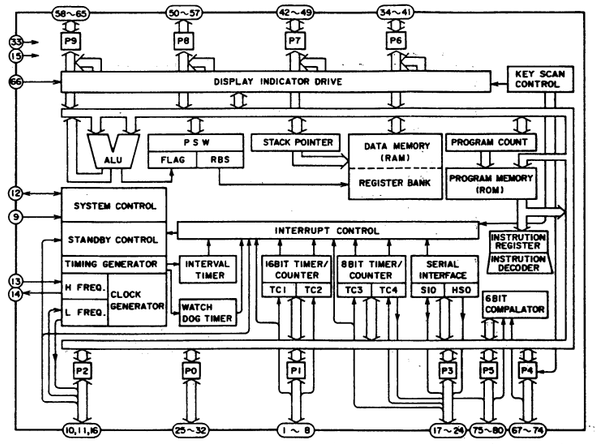

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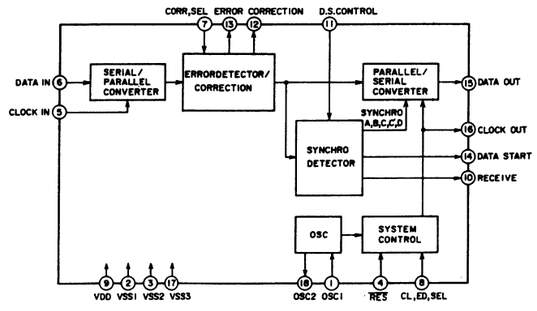

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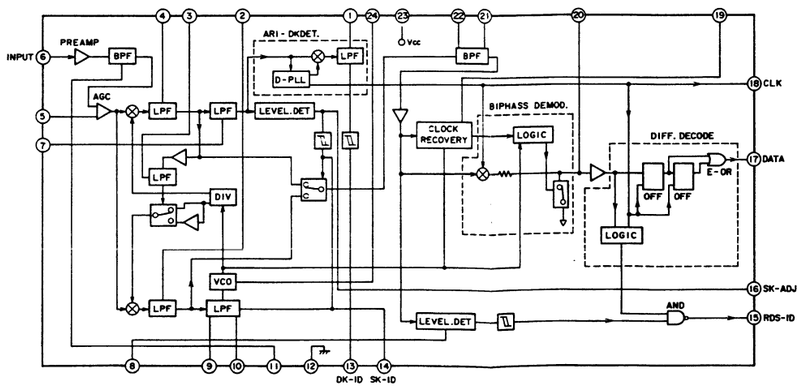

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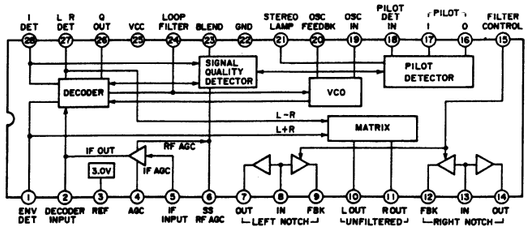
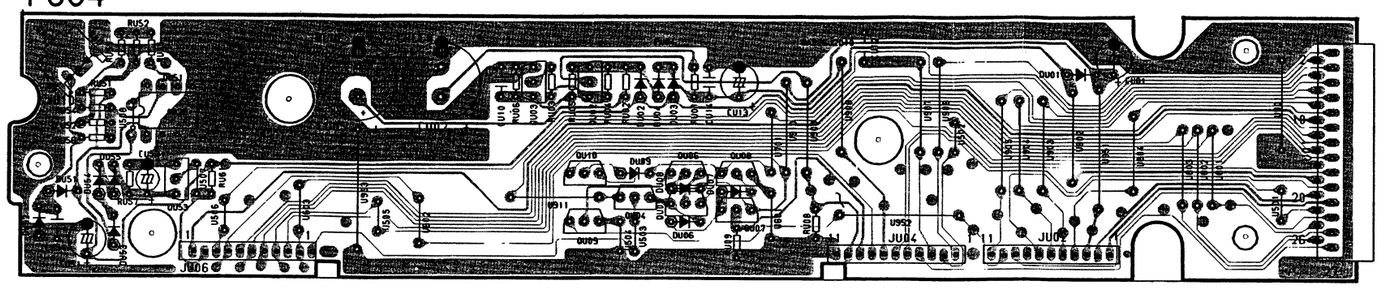


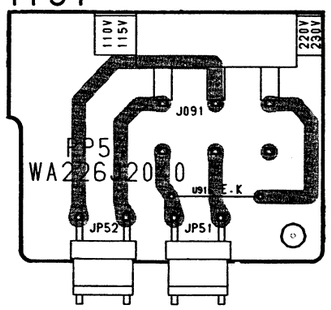
QU51 QU53

QU02 ~ QU10

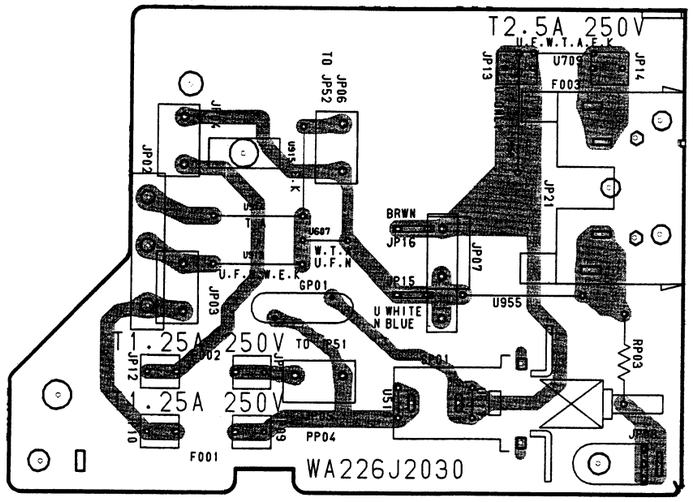
PU04

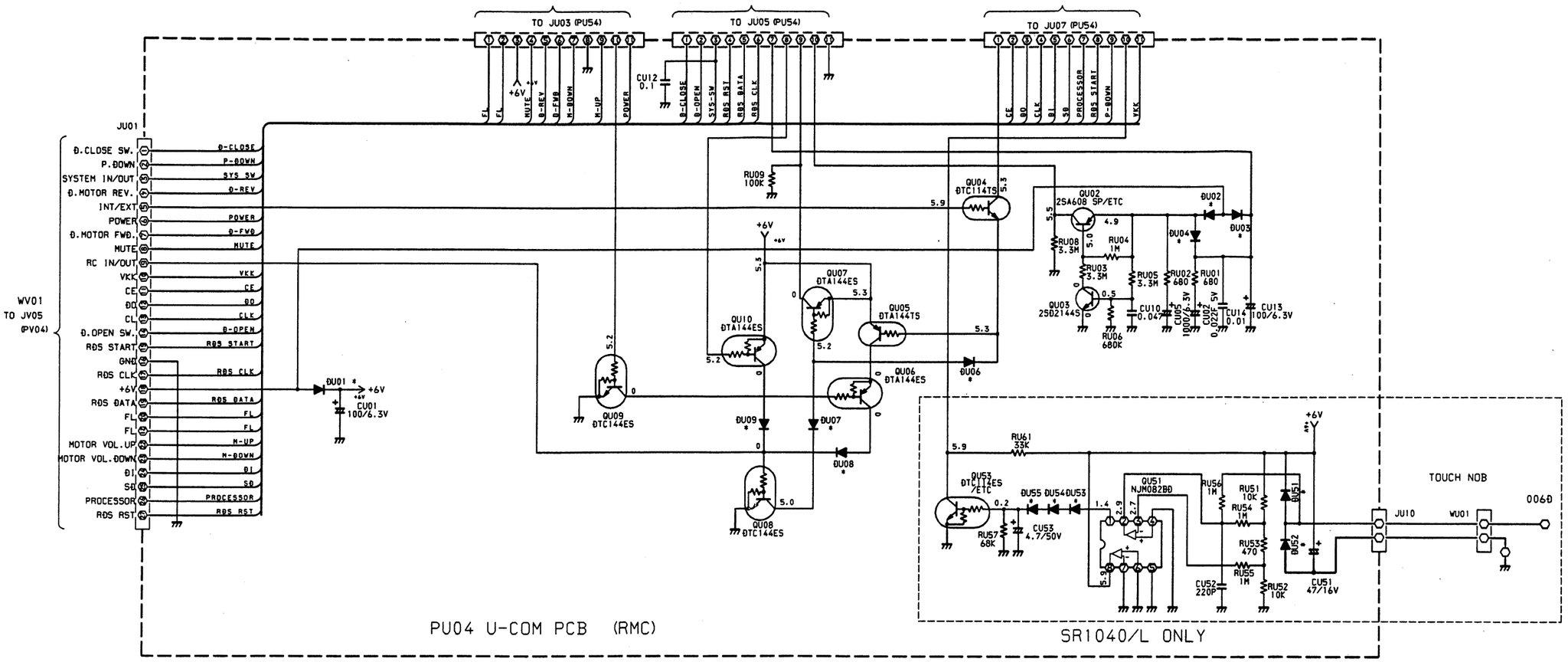


PP54



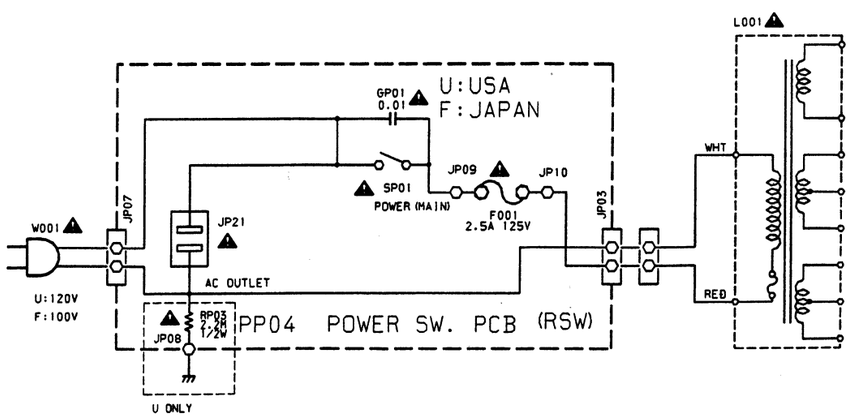
PP04

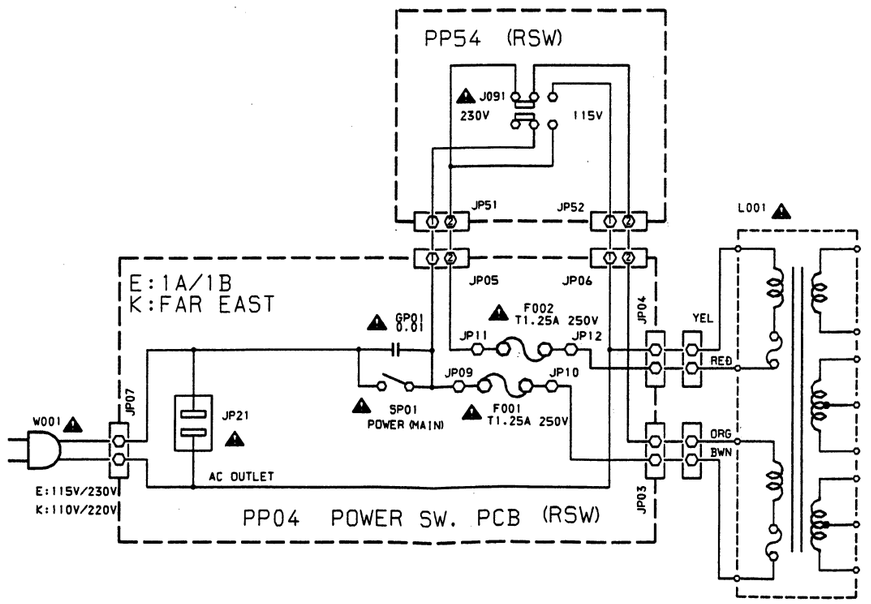




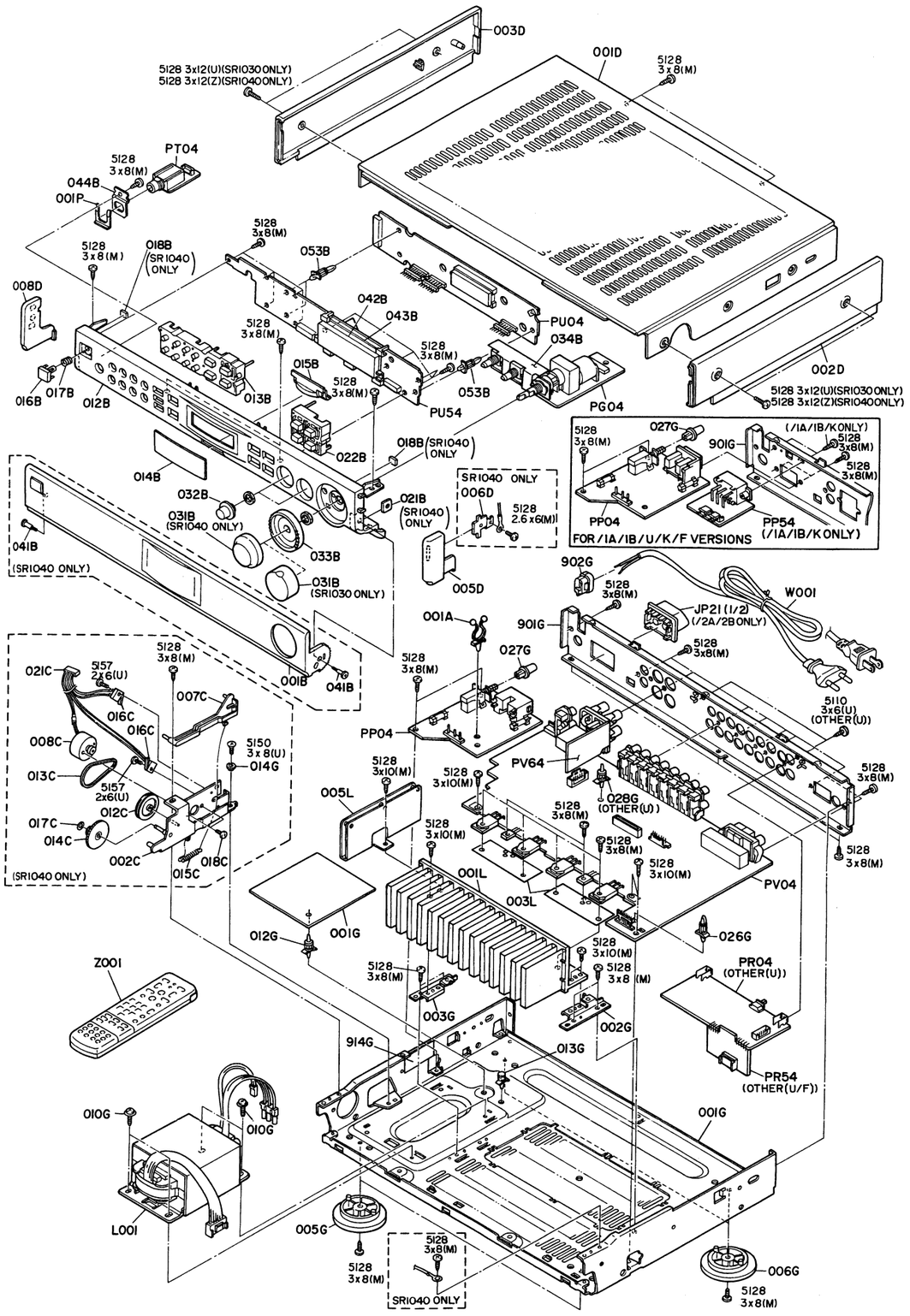
FUNCTION : CÐ
VOLUME : MINIMUM
FM FREQ. : 87.5MHZ
ÐOOR : CLOSE
CLOCK : SET

➡ :AUÐIO L,R
◘▷ :FM L,R
■▷ :AM L,R





4. EXPLODED VIEW AND PARTS LIST



REF. DESIG.	PART NO.	DESCRIPTION
001B	4822 426 60645	ESCUTCHEON, DOOR PANEL ASSY
012B	4822 426 51781	FRONT PANEL (SR1040)
012B	4822 426 51784	FRONT PANEL (SR1030)
013B	4822 410 63503	BUTTON BLOCK (L) (SR1040)
013B	4822 410 63507	BUTTON BLOCK (L) (SR1030)
014B	4822 450 62123	FL WINDOW (SR1040)
014B	4822 450 62144	FL WINDOW (SR1030)
015B	4822 381 11434	IR LENS
016B	4822 410 62813	POWER BUTTON (SR1040)
016B	4822 410 62877	POWER BUTTON (SR1030)
017B	4822 492 33409	POWER BUTTON SPRING
022B	4822 410 63504	BUTTON BLOCK (R) (SR1040)
022B	4822 410 63509	BUTTON BLOCK (R) (SR1030)
031B	4822 413 41818	MAIN VOLUME KNOB (SR1040)
031B	4822 413 41823	MAIN VOLUME KNOB (SR1030)
032B	4822 413 31768	TONE KNOB (SR1040)
032B	4822 413 31775	TONE KNOB (SR1030)
033B	4822 413 41819	BALANCE KNOB (SR1040)
033B	4822 413 41822	BALANCE KNOB (SR1030)
041B	4822 502 21379	DOOR SPECIAL SCREW
042B	4822 256 92093	FL HOLDER
007C	4822 404 21283	LEVER
008C	4822 361 21687	MOTOR ASSY
012C	4822 528 40363	PULLEY
013C	4822 358 31264	BELT
014C	4822 522 33388	GEAR
015C	4822 492 33411	SPRING
016C	4822 271 30768	MINI SWITCH
017C	4822 462 71954	STOPPER, WASHER
018C	4822 502 21381	P.H.M. SCREW, (M1.7 x 2)
002D	4822 426 30156	SIDE PANEL (R) (SR1040)
002D	4822 443 41304	SIDE PANEL (R) (SR1030)
003D	4822 426 30157	SIDE PANEL (L) (SR1040)
003D	4822 443 41305	SIDE PANEL (L) (SR1030)
005D	4822 532 12253	BUSHING, SIDE (R) (SR1040)
005D	4822 532 21483	BUSHING, SIDE (R) (SR1030)
006D	4822 281 50181	TOUCH CONTACTOR (SR1040)
008D	4822 532 12254	BUSHING, SIDE (L) (SR1040)
008D	4822 532 21484	BUSHING, SIDE (L) (SR1030)
005G	4822 462 42064	LEG, FRONT (SR1040)
005G	4822 462 42063	LEG, FRONT (SR1030)
006G	4822 462 42065	LEG, REAR (SR1040)
006G	4822 462 42051	LEG, REAR (SR1030)
010G	4822 502 12511	B.T. SCREW (W / W), TRANSF.
027G	4822 410 60343	MAIN POWER BUTTON
902G	4822 532 61184	BUSHING, AC CORD [/ 01]
902G	4822 532 60948	BUSHING, AC CORD [/ 02]
003L	4822 466 62412	POWER TR SHEET
▲L001	4822 146 21753	POWER TRANSF., 115V 230V [/ 01]
▲L001	4822 146 21752	POWER TRANSF., 230V 240V [/ 02]
001T	4822 736 22227	USER MANUAL
Z001	4822 218 10563	UNIT K, REMOTE COMMANDER
Z003	4822 157 63083	LOOP ANTENNA
Z004	4822 303 50079	EXT. ANTENNA
Z006	4822 265 10092	JACK, AC ADAPTER [/ 01]

◘アイドリング電流の調整

（1）電源を投入しない状態で、マスターボリュームを最小の位置にします。
（2）電流調整用半固定抵抗R719（Lch）、R720（Rch）を中央の位置にします。
（3）セメント抵抗R737（Lch）、R738（Rch）の両端のピンに、デジタル電圧計を接続します。

＊電源を投入しアイドリング電流を、下表に従ってR719、R720を調整します。

参考
アイドリング電流調整済みのセットを、冷えた状態から電源投入すると、30秒後に約3.5mV、1分後に約4.5mVに達する。10分後には平衡状態となり、7mVで安定します。
従って、電源投入後、30秒後～1分以内に調整作業を行なう場合は「4mV」に調整します。同様に1分後～2分以内の場合は「5mV」に、2分後～3分以内の場合は「6mV」に調整します。5分後以降は、設定値である「7mV」に調整します。
尚、ヒートラン、エージング後あるいは修理後に調整を行なう場合は、10分間無信号、無負荷、電源投入状態で放置し、その後設定値である「7mV」に調整します。

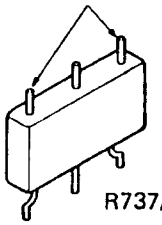
5. IDLING CURRENT ADJUSTMENT

(1) Before switching the power ON, set the Master Volume control to the minimum position and the Balance and Tone controls to the center positions.
Then, rotate the semi-fixed resistors R719 (L CH) and R720 (R CH) on the PC board PV04 center positions.
(2) Connect a digital voltmeter, set for the DC voltage input to the pertinent test points (the marked ones of R737-R738) on the PC board PV04.
(3) After the completion of the above setup.
Switch the power ON and adjust the semi-fixed resistors R719 (L CH) and R720 (R CH) on the PC board PV04 according to the reading of the digital voltmeter. The setting values are 7 mV (19.4 mA) of the both channels.

Note:
When you proceed to this adjustment after having serviced the unit, operate the unit with a non-signal condition for about 15 minutes after turning its power ON, then adjust to 7 mV.
If you should proceed to the adjustment in less than 15 minutes after turning the power ON, refer to the following table for the value to be adjusted.

Power ON	
30 sec. ~ 1 min.	4.0 mV
1 min. ~ 2 min.	5.0 mV
2 min. ~ 3 min.	6.0 mV
More than 10 min.	7.0 mV

Measurement point



R737/R738

◘サービスプログラム

（1）トラッキングポイントメモリー

「MEMO」「TAPE」keysを同時押ししながら「FM／AM」keyを押します。下表参照（FM: JAPAN, AM: 10 kHz）

memoryをclearする場合は
「MEMO」「TAPE」keysを同時押ししながら「AUX」keyを押します。この場合、全ての「RAM Data」がclearされます。

（2）FLセグメントチェック

「MEMO」「TAPE」キーを同時押ししながら「P. SCAN」を押します。
all segmentsが点灯します。この時、functionが「TUNER」の場合は約5秒後に消灯し、最左端桁より1桁ずつ順番に点灯します。「TUNER」以外のfunctionでは、全点灯のままです。
segment check mode中は他の動作は一切しません。
power offでcancelされます。

6. SERVICE PROGRAM

6-1. T.R POINT ME (tracking point memory) mode.
While holding the MEMO and TAPE keys depressed simultaneously, press the FM / AM (MW) key, the T.R POINT ME mode is called. Frequencies to be memorized are as follows.

		P1	P2	P3	P4	P5	P6	P7
FM [MHz]	EUROPE	90	98	106	87.5			
	USA	90	98	106	87.5			
	JAPAN	78	83	88	76.0			
AM [KHz]	9KHz without LW					603	999	1404
	9KHz with LW					603	999	1404
	10 KHz					600	1000	1400

		P8	P9	P10	P11	P12 ~ P30
AM [KHz]	9KHz without LW	-	-	-	-	-
	9KHz with LW	171	207	270	152	531
	10 KHz	-	-	-	-	-

- : Low end frequency of the AM (MW) band.

To clear the entire memory:
While holding the MEMO and TAPE keys depressed simultaneously, press the AUX key. This will clear the RAM data entirely.

6-2. FL segment check mode.
While holding the MEMO and TAPE keys depressed simultaneously, press the P. SCAN keys.
All of the display segments light up. If the current input function is TUNER, the segments go off in about 5 seconds then the segments of each display digit light one after another starting with the leftmost digit. If the current input function is other than TUNER, all of the segments remain lit.
No other operation occurs during the segment check mode. This mode can be cancelled by turning the power OFF.

7. TUNER ALIGNMENT PROCEDURES

- Set to T.R point ME mode of the service program.
(P2) to (P10) in the Digital Readout Frequency Setting column shows preset numbers for the above mode.
- Before alignment, connect a dummy resistor of 47 kohms to the tape output terminal.

7-1. FM Alignment Procedures

(Band switch at "FM" position and MODE switch at "MONO" position)

FM RF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator to FM antenna terminal. Adjust the RF signal output so that slight noise occurs at the upper and lower sides of the output waveform.	98.0 MHz	AC VTVM to L-or R-channel Tape out (JV02)	98.0 MHz (P2)	Front end (A101) IFT for maximum output and minimum distortion.
2	FM signal generator 500 μV output to FM antenna terminal (75-ohm).	98.0 MHz	Distortion meter to L-or R-channel Tape out (JV02)	98.0 MHz (P2)	L201 core for minimum distortion.

FM IF Alignment

(Band switch at "FM" position and MODE switch at "AUTO STEREO" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator 500 μV output modulated by MPX signal generator to FM antenna terminal (75-ohm).	Stereo L-channel (1.000 Hz)	VTVM to L-channel Tape out (JV02 L-channel)	98.0 MHz (P2)	Front end (A101) IFT for minimum distortion.
2	Modulation level: IHF 67.5 kHz +9% pilot dev. DIN 40 kHz +8% pilot dev.	Stereo R-channel (1.000 Hz)	VTVM to R-channel Tape out (JV02 R-channel)		

Muting Level Alignment

(Band switch at "FM" position and MODE switch at "AUTO STEREO" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator 6.3 μV output to FM antenna terminal (75-ohm)	98.0 MHz	AC VTVM to L-or R- channel Tape out (JV02)	98.0 MHz (P2)	R212 to a point at which output appears.

Multiplex Alignment

(Band switch at "FM" position and MODE switch at "AUTO STEREO" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator 500 μV output modulated by MPX signal generator to FM antenna terminal (75-ohm) Modulation level : IHF 67.5 kHz +9% pilot dev. DIN 40 kHz +8% pilot dev.	Stereo L-channel (1.000 Hz)	VTVM to R-channel Tape out (JV02 R-channel)	98.0 MHz (P2)	R211 so that channel separation is identical between both channels.
2		Stereo R-channel (1.000 Hz)	VTVM to L-channel Tape out (JV02 L-channel)		
3	Repeat steps 1 and 2				

RDS 57 kHZ BPF Alignment (Europe only)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator 500 μV output modulated by MPX signal generator to FM antenna terminal (75-ohm). Modulation level: RDS signal 1 kHz dev.	98.0 MHz	AC VM and Oscilloscope between U711 and GND. (PR04)	98.0 MHz	RR06 for maximum output.

7-2. AM (MW) / LW Alignment Procedures

(Band switch at "MW" or "AM" position)

AM IF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	Sweep generator to AM antenna terminal.	450 kHz	AC VTVM to L-or R-channel Tape out (JV02)	——	LA06 for maximum and symmetrical waveform.

AM (MW) RF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	AM signal generator to AM loop antenna in a test loop.	603 kHz (Europe, Japan) 600 kHz (USA)	VTVM to L-or R-channel Tape out (JV02)	603 kHz 600 kHz (P5)	LA01 for maximum output.
2		1404 kHz (Europe, Japan) 1400 kHz (USA)		1404 kHz 1400 kHz (P7)	CA01 for maximum output.
3	Repeat steps 1 and 2 until sensitivity is maximized.				

AM Auto Stop Alignment (Band switch at "MW" or "AM" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	RF generator to AM loop antenna in a test loop (500 μV / m)	999 kHz (Europe, Japan) 1000 kHz (USA)	—	999 kHz 1000 kHz (P6)	RA11 so that the "TUNED" on the display tube lights.

LW RF Alignment (Europe only)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	AM signal generator to AM loop antenna in a test loop.	171 kHz	VTVM to L-or R-channel Tape out (JV02)	171 kHz (P8)	LA03 for maximum output.
2		270 kHz		270 kHz (P10)	CA08 for maximum output.
3	Repeat steps 1 and 2 until sensitivity is maximized.				

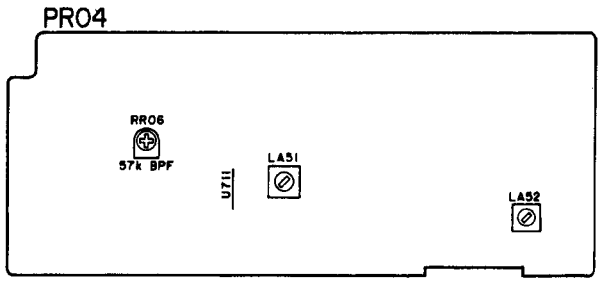
AM Stereo 調整 (Japan only)

調整箇所 ： LA51, LA52, LA06
調整周波数 ： 999 kHz, 50mV／m (94 dB／m)
変調条件 ： 400 Hz (L+R) = 30% MOD.
25 Hz PILOT= 5% MOD.

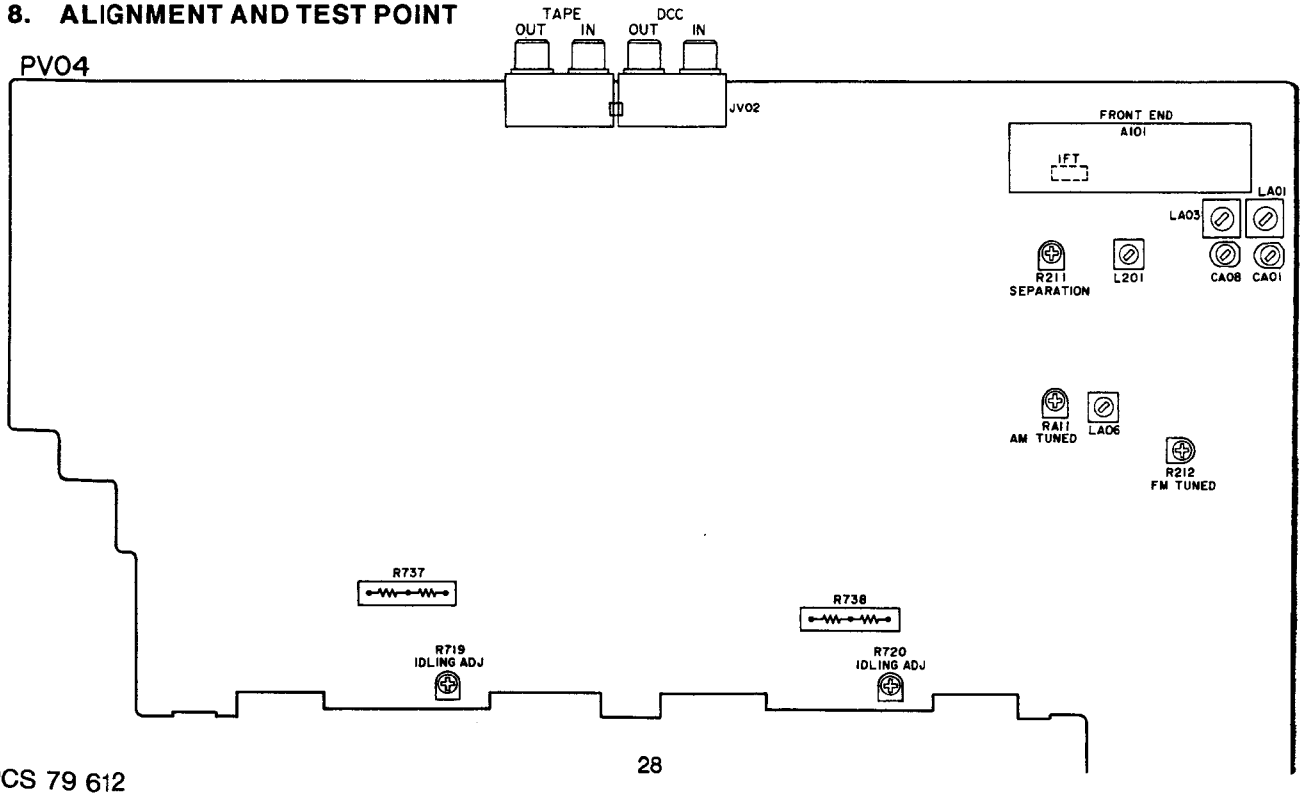
1．SG の変調を「L−R」(SUB), PILOT−OFF にする。
2．セットの Lch (又は Rch) の出力が最小になるように、LA51, LA52 を調整、LA06 を微調整する。(注)

＊MODE SW は、「AUTO」ポジションとする。

(注) LA52 の調整はブロードであり、セットの出力変化は極僅かです。



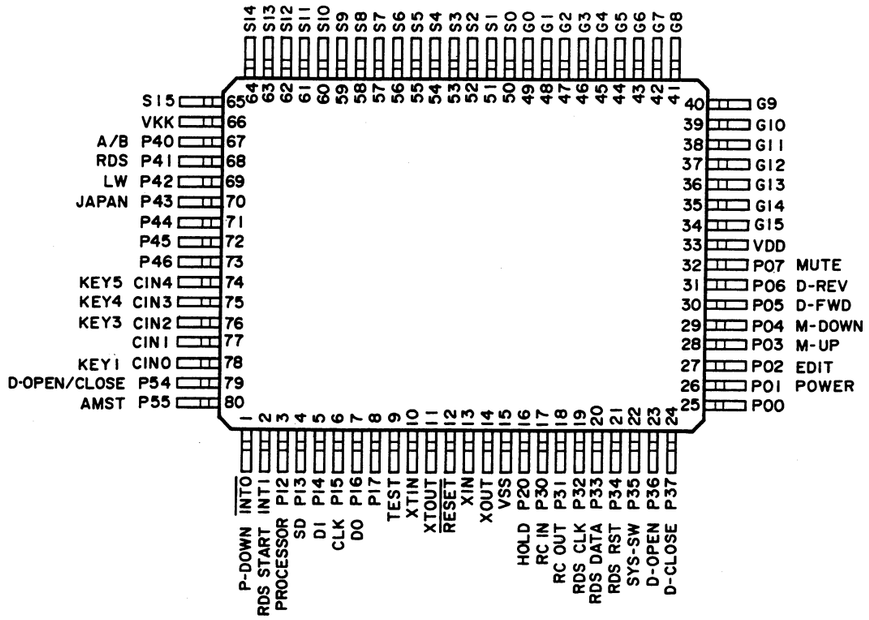
8. ALIGNMENT AND TEST POINT



9. MICROPROCESSOR SPECIFICATIONS

Receiving Frequency Range, Channel Space, Reference Frequency and Intermediate Frequency

		Receiving Frequency	Channel Space	Reference Frequency	Intermediate Frequency
Europe	FM	87.5 ~ 108.0 MHz	50 kHz	25 kHz	+10.7 MHz
	MW	531 ~ 1602 kHz	9 kHz	9 kHz	+450 kHz
	LW	152 ~ 282 kHz	1 kHz	1 kHz	+450 kHz
U.S.A.	FM	87.5 ~ 108.0 MHz	100 kHz	25 kHz	+10.7 MHz
	AM	520 ~ 1710 kHz	10 kHz	10 kHz	+450 kHz
Japan	FM	76.0 ~ 90.0 MHz	100 kHz	25 kHz	-10.7 MHz
	AM	531 ~ 1602 kHz	9 kHz	9 kHz	+450 kHz

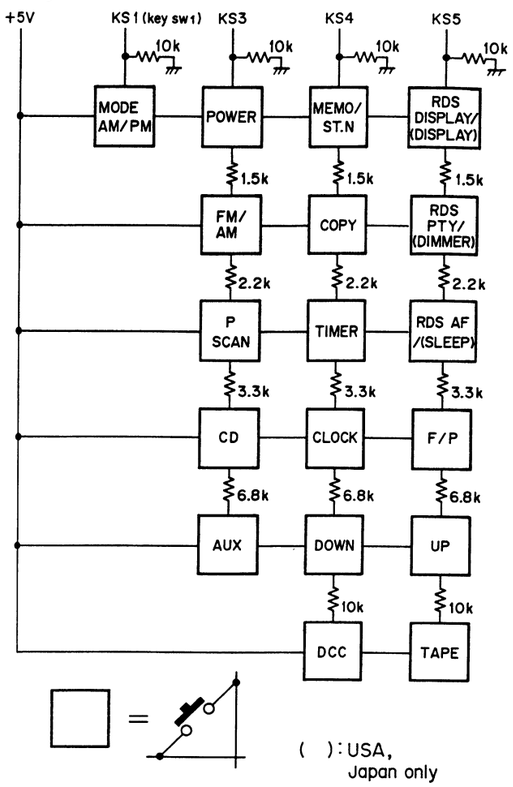


TMP87CK70AF

Pin No.	Pin name		I / O	Action	Function
1	INT0	P-DOWN	I	H	Power down signal
2	INT1	RDS START	I	L	RDS Data start
3	P12	PROCESSOR	I	H	Processor SW
4	P13	SD	I	L	SD in
5	P14	DI	I	H	Di in
6	P15	CLK	0	H	Clock out
7	P16	DO	0	H	Data out
8	P17	CE	0	H	CE out
9	TEST	TEST	I	-	Not used
10	XT in	XT in	I	-	Sub clock,32.768kHz
11	XT out	XT out	0	-	Sub clock
12	RESET	RESET	I	L	Reset
13	X in	X in	I	-	Main clock, 8.0MHz
14	X out	X out	0	-	Main clock
15	Vss	Vss	-	-	GND
16	P20	HOLD	I	H	Hold
17	P30	RC IN	I	H	RC-5 in
18	P31	RC OUT	0	L	RC-5 out
19	P32	RDS CLK	I	L	RDS clock in
20	P33	RDS DATA	I	L	RDS data in
21	P34	RDS RST	0	L	RDS reset out
22	P35	SYS-SW	I	H	System SW
23	P36	D-OPEN	I	L	Door open SW
24	P37	D-CLOSE	I	L	Door close SW
25	P00		0	-	Not used
26	P01	POWER	0	H	Power relay drive
27	P02	EDIT	0	L	Edit
28	P03	M-UP	0	H	Motor volume up
29	P04	M-DOWN	0	H	Motor volume down
30	P05	D-FWD	0	H	Door motor forward
31	P06	D-REV	0	H	Door motor reverse
32	P07	MUTE	0	H	Muting
33	Vdd	Vdd	-	-	+5V
34	G15	G15	0	-	Not used
35	G14	G14	0	-	Not used
36	G13	G13	0	-	Not used
37	G12	G12	0	-	Not used
38	G11	G11	0	-	Not used
39	G10	G10	0	-	Not used
40	G9	G9	0	H	FTD 1G digit

Pin No.	Pin name		I / O	Action	Function
41	G8	G8	0	H	FTD 2G digit
42	G7	G7	0	H	FTD 3G digit
43	G6	G6	0	H	FTD 4G digit
44	G5	G5	0	H	FTD 5G digit
45	G4	G4	0	H	FTD 6G digit
46	G3	G3	0	H	FTD 7G digit
47	G2	G2	0	H	FTD 8G digit
48	G1	G1	0	H	FTD 9G digit
49	G0	G0	0	H	FTD 10G digit
50	S0	S0	0	H	FTD S16 segment
51	S1	S1	0	H	FTD S15 segment
52	S2	S2	0	H	FTD Sr segment
53	S3	S3	0	H	FTD Sp segment
54	S4	S4	0	H	FTD Sn segment
55	S5	S5	0	H	FTD Sm segment
56	S6	S6	0	H	FTD Sk segment
57	S7	S7	0	H	FTD Sj segment
58	S8	S8	0	H	FTD Sh segment
59	S9	S9	0	H	FTD Sd segment
60	S10	S10	0	H	FTD Sc segment
61	S11	S11	0	H	FTD Se segment
62	S12	S12	0	H	FTD Sg segment
63	S13	S13	0	H	FTD Sf segment
64	S14	S14	0	H	FTD Sb segment
65	S15	S15	0	H	FTD Sa segment
66	Vkk	Vkk	-	-	-30V
67	P40	A/B	I	-	MODEL
68	P41	RDS	I	L	*RDS (SELECT)
69	P42	LW	I	L	*LW (SELECT)
70	P43	JAPAN	I	H	*JAPAN (SELECT)
71	P44		0	-	Not used
72	P45		0	-	Not used
73	P46		-	-	Not used
74	CIN4	KEY5	I	-	Key SW 5
75	CIN3	KEY4	I	-	Key SW 4
76	CIN2	KEY3	I	-	Key SW 3
77	CIN1		I	-	Not used
78	CIN0	KEY1	I	-	Key SW 1
79	P54	D-OPEN/ CLOSE	I	L	Door key SW
80	P55	AMST	I	H	* AM stereo SELECT

Key Matrix



( ): USA, Japan only

Description of Keys

*** RDS DISPLAY/(DISPLAY) key**
This key is used to switch the information shown on the display. It is valid only during tuner reception.
Usually, the display shows the station name but the frequency appears when the key is pressed.
During reception of a station without station name, its frequency is displayed. If this key is pressed then, "NO NAME" will be displayed for about 2 second.

*** RDS PTY/(DIMMER) key**
This key is used to select the PTY (Programme Type).
When this key is pressed during reception of an RDS station, the PTY of the station being received will be displayed for about 5 seconds. If the UP or DOWN key is pressed after displaying the PTY, the PTY auto search starts and stops only when a station of the same PTY is received.
In case of "without RDS", this key functions as the Dimmer key, which varies (dims) the display brightness when it is pressed.

*** RDS AF/(SLEEP) key**
This key is used to switch the station being received to an AF (Alternative Frequencies) station. When the key is pressed during reception of an RDS station, a station broadcasting the same programme will be received. If there is no AF station to the original station, :NO AF" will be displayed.
In case of "without RDS", this key functions as the Sleep key, which allow to set the sleep timer.

*** F/ P key**
This key is used to switch the function of the UP / DOWN keys between the Frequency up / down keys and Preset up / down keys.

*** UP / DOWN keys**
These keys are used to increase or decrease the frequency or preset number.
In the clock and timer modes, these keys are used to set the time, programme, etc.

*** TAPE, DCC, CD and AUX keys**
These keys are used to select the input function.

*** FM / AM keys**
This key is used to select the tuner mode and the receiving band.
In case the LW band is available, this key functions as the FM / MW / LW band selector keys.

*** P. SCAN key**
This key is used to initiate the preset scanning of radio stations.
With preset scanning, the preset stations in memory are received sequentially for 5 seconds per each station.
When this key is pressed again, the preset scanning stops at that point.

*** MODE AM / PM key**
This key is usually used as the MODE key for selecting the FM reception mode (Auto stereo / Mono).
In the clock and timer modes, this key functions as the AM / PM selector key.

*** MEMO / ST. N key**
This key is usually used as the MEMO key for use in storing preset stations in memory or programming of the clock or timer.
When the key is held depressed for more than 3 seconds, the station name input mode is initiated and this key allows to input the station name manually.

*** COPY key**
This key is used to initiate direct recording from DCC to TAPE. This key is invalid if D. BUS switch on the rear panel is set to SYSTEM.

*** CLOCK key**
This key is used when setting the current time of the day. When this key is pressed while the power is ON, the current time will be displayed for about 3 seconds.

*** TIMER key**
This key is used when setting the programme timer or checking the programmed contents.

*** POWER key**
This key is used to turn the power ON / OFF. The clock is displayed while the power is OFF.

*** DISPLAY key**
DISPLAY 部の表示を切換る Key です。チューナ受信時のみ有効です。

*** DIMMER key**
Key を押すと表示部の明かるさが変化（暗くなる）します。

*** SLEEP key**
Sleep key で Sleep timer を設定することができます。

*** F／P key**
UP／DOWN keys を、Frequency up／down か Preset up／down かに切換る key です。

*** UP／DOWN keys**
Frequency Preset number の up／down key です。
Clock、Timer mode の時には、Time、Programme 等の設定 keys になります。

*** TAPE、DCC、CD、AUX keys**
Function 切換 key です。

*** FM／AM key**
Tuner 選択及び受信 Band 切換 key です。

*** P. SCAN key**
Tuner の Preset scan を行なう key です。
Memory されている Preset station を 5 秒間ずつ、順番に受信します。
Preset scan 中に再度 key を押すと stop します。

*** MODE AM／PM key**
FM／AM の受信 Mode（Auto stereo／Mono）を切換る key です。
Clock、Timer mode の時には、AM／PM 切換え key になります。

*** MEMO／ST. N key**
Tuner の Preset memory や Clock、Timer の Programme 等に使用する Memory key です。
3 秒以上押し続けると、Station name input mode になり、manual で station name を input することができます。

*** COPY key**
DCC から TAPE に直接、録音する時に使用する key です。
Rear panel の「D. BUS」の Switch が「SYSTEM」に切換えてある時には、無効 key となります。

*** CLOCK key**
現時刻を設定する時に使用する key です。又、Power on 中に key を押すと表示部に約 3 秒間現時刻が表示されます。

*** TIMER key**
Programme timer の設定や Programme 内容の確認を行なう key です。

*** POWER key**
Power on／off key です。power off 時は時計表示となります。

10. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R*** : 1) GD05 x x x 140, Carbon film fixed resistor, ±5% 1/4W
R*** : 2) GD05 x x x 160, Carbon film fixed resistor, ±5% 1/6W

(1) —— Resistance value

Examples :

(1) Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MΩ...105
6.8Ω...068	390Ω...391	22kΩ...223	4.7MΩ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C*** : CERAMIC CAP.

1) DD1x x x x 370, Ceramic capacitor
Disc type
Temp.coeff.P350~N1000.50V
(1) (2)
(2) —— Capacity value
(1) —— Tolerance

Examples

(1) Tolerance (Capacity deviation)
±0.25pF ... 0
±0.5pF ... 1
±5% ... 5

* Tolerance of COMMON PARTS handled here are as follows :
0.5pF~ 5pF...±0.25pF
6pF~ 10pF...±0.5pF
12pF~ 560pF...±5%

(2) Capacity value

0.5pF...005	3pF...030	100pF...101
1pF...010	10pF...100	220pF...221
1.5pF...015	47pF...470	560pF...561

C*** : CERAMIC CAP

1) DK16 x x x 300, High dielectric constant ceramic capacitor
(1) Disc type
Temp.chara. 2B4, 50V
(1) —— Capacity value

Examples

(2) Capacity value

100pF...101	1000pF...102	10000pF...103
470pF...471	2200pF...222	

C*** : ELECTROLY CAP.(⧧), FILM CAP.(⧦)

1) EA x x x x x x 10, Electrolytic capacitor
One-way lead type, Tolerance ±20%
① ②
② —— Working voltage
① —— Capacity value

Examples

(1) Capacity value

0.1μF...104	4.7μF...475	100μF...107
0.33μF...334	10μF...106	330μF...337
1μF...105	22μF...226	1100μF...118
		2200μF...228

(2) Working voltage

6.3V...006	25V...025	
10V...010	35V...035	
16V...016	50V...050	

2) DF15 x x x 350 } Plastic film capacitor
DF15 x x x 310 } One-way type, Mylar ±5% 50V
DF16 x x x 310 Plastic film capacitor
One-way type, Mylar ±10% 50V
(1)
(1) —— Capacity value

Examples

(1) Capacity value

0.001μF(1000pF)...102	0.1μF...104
0.0018μF.....182	0.56μF...564
0.01μF.....103	1μF...105
0.015μF.....153	

NOTE : 1) The above CODES (R***,R***,C***,C*** and (C***) are omitted on the schematic diagram in some case.
2) On the occasion, be confirmed the common parts on the parts list.
3) Refer to "Common Parts List" for the other common parts(**RI05, DD4, DK4**).

NOTE ON SAFETY FOR FUSIBLE RESISTOR :

The suppliers and their type numbers of fusible resistors are as follows :

1. KOA Corporation

Part No.	Type No.	Description
NH05 x x x 140	→ RF25S x x x x Ω J	(±5% 1/4W)
NH05 x x x 120	→ RF50S x x x x Ω J	(±5% 1/2W)
NH85 x x x 110	→ RF73B2A x x x x Ω J	(±5% 1/10W)
NH95 x x x 140	→ RF73B2E x x x x Ω J	(±5% 1/4W)

* Resistance value — Resistance value (0.1 - 10kΩ)

2. Matsushita Electronic Components Co., Ltd

Part No.	Type No.	Description
NF05 x x x 140	→ ERD-2FCJ x x x	(±5% 1/4W)
RF05 x x x 140		
NF02 x x x 140	→ ERD-2FCG x x x	(±2% 1/4W)
RF02 x x x 140		

* Resistance value — * Resistance value

Examples :

* Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MΩ...105
6.8Ω...068	390Ω...391	22kΩ...223	4.7MΩ...475

NOTE ON SAFETY :

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

REF. DESIG.	PART NO.	DESCRIPTION
		PG04-MOTOR VOLUME AND TONE CONTROL CIRCUIT BOARD
		PG04-CAPACITORS
CE01	4822 126 10408	CERAMIC 220μF ±10% 25V
CE02	4822 126 10408	CERAMIC 220μF ±10% 25V
CE09	4822 124 23056	ELECT 47μF 16V
CE10	4822 124 23056	ELECT 47μF 16V
CE15	4822 124 23055	ELECT 22μF 16V
CE16	4822 124 23055	ELECT 22μF 16V
CE17 ~ CE20	4822 124 21894	ELECT 10μF 16V
CG01	4822 122 30103	CERAMIC 0.022μF +80% -20% 50V
CG05	4822 124 23052	ELECT 100μF 16V
C***		**PG04-CAPACITORS (COMMON)** PLASTIC FILM CAPACITOR, ±5% 50V : CE05~CE08, CE11~CE14
		PG04-RESISTORS
▲RE01	4822 052 10151	150 Ω ±5% 1/6W
▲RE02	4822 052 10151	150 Ω ±5% 1/6W
RE19	4822 101 30834	10K Ω (E) VARIABLE
RE20	4822 101 30834	10K Ω (E) VARIABLE
RG01	4822 101 30835	100K Ω (B)X2/100K(W) VARIABLE
R***		**PG04-RESISTORS (COMMON)** CARBON FILM FIXED RESISTOR, ±5% 1/6W : RE05~RE18, RE21~RE24, CG03, CG04
		PG04-SEMICONDUCTORS
DE01	4822 130 32508	DIODE RL103E / DSF10C
QE01	4822 209 73064	IC NJM2068DD
QE02	4822 130 60766	DIGITAL TRANSISTOR DTA114ES/ UN4111
		PG04-MISCELLANEOUS
LE01	4822 280 20501	RELAY MR62-24SR
		PP04-POWER SW CIRCUIT BOARD
		PP04-CAPACITOR
▲GP01	4822 122 33276	CERAMIC 0.01μF ±20% 400V
		PP04-MISCELLANEOUS
▲F001	4822 070 31252	FUSE 1.25A 250V
▲F002	4822 070 31252	FUSE 1.25A 250V [/01]
▲F003	4822 253 40166	FUSE T2.5A 250V [/02]
▲JP21	4822 267 31686	JACK, AC OUTLET 1P [/01]
▲JP21	4822 267 31687	JACK, AC OUTLET 1P [/02]
▲SP01	4822 276 12924	PUSH SWITCH, POWER
		PP54-VOLTAGE SELECTOR CIRCUIT BOARD
▲J091	4822 277 21763	SLIDE SWITCH [/01]

REF. DESIG.	PART NO.	DESCRIPTION
		PR04-RDS / AM STEREO CIRCUIT BOARD
		PR04-CAPACITORS
CR01	4822 126 10935	ELECT 100μF 6.3V
CR02	4822 124 21894	ELECT 10μF 16V
CR05	4822 122 40586	CERAMIC 0.01μF ±20% 25V
CR06	4822 122 40586	CERAMIC 0.01μF ±20% 25V
CR07	4822 124 21894	ELECT 10μF 16V
CR08	4822 124 21894	ELECT 10μF 16V
CR09	4822 124 23057	ELECT 4.7μF 50V
CR10	4822 124 21894	ELECT 10μF 16V
CR11	4822 122 30103	CERAMIC 0.022μF +80% -20% 50V
U526	4822 122 40586	CERAMIC 0.01μF ±20% 25V
U529	4822 122 40586	CERAMIC 0.01μF ±20% 25V
C***		**PR04-CAPACITORS (COMMON)** HIGH DIELECTRIC CONSTANT CERAMIC CAPACITOR, ±10% 50V : CR03, CR04
C***		PLASTIC FILM CAPACITOR, ±5% 50V : CR12~CR14
		PR04-RESISTORS
RR06	4822 100 11373	4.7K Ω, TRIMMING
RR10	4822 116 83929	220 Ω ±5% 1/4W
R***		**PR04-RESISTORS (COMMON)** CARBON FILM FIXED RESISTOR, ±5% 1/6W : RR01~RR05, RR07~RR09
		PR04-SEMICONDUCTORS
DR01	4822 130 80317	ZENER DIODE 5.1V
QR01	4822 209 32706	IC LA2232
QR02	4822 209 33818	IC LC7073
		PR04-MISCELLANEOUS
SV51	4822 277 21712	SLIDE SWITCH, PROCESSOR ON / OFF
XR01	4822 242 81608	CERAMIC RESONATOR CSB456F33
XR02	4822 242 72527	CERAMIC RESONATOR CST4.00MGW
		PT04-HEADPHONE CIRCUIT BOARD
C***		**PT04-CAPACITORS (COMMON)** HIGH DIELECTRIC CONSTANT CERMIC CAPACITOR, ±10% 50V : (CT01, CT02 [/02])
		PT04-MISCELLANEOUS
JT01	4822 267 31685	JACK, HEADPHONE

REF. DESIG.	PART NO.	DESCRIPTION
		PU04-μ-COM CIRCUIT BOARD
		PU04-CAPACITORS
CU01	4822 126 10935	ELECT 100μF 6.3V
CU02	4822 124 23295	BIG ELECT 0.022F 5V
CU05	4822 126 12867	ELECT 1000μF 6.3V
CU12	4822 122 40617	CERAMIC 0.1μF +80% -20% 50V
CU51	4822 124 23056	ELECT 47μF 16V (SR1040)
CU52	4822 126 10408	CERAMIC 220PF ±10% 25V (SR1040)
CU53	4822 124 23057	ELECT 4.7μF 50V (SR1040)
		PU04-CAPACITORS (COMMON)
C***		PLASTIC FILM CAPACITOR, ±5% 50V : CU10
		PU04-RESISTORS
RU03	4822 050 23308	3.3MΩ ±5% 1/6W
RU05	4822 050 23308	3.3MΩ ±5% 1/6W
RU08	4822 050 23308	3.3MΩ ±5% 1/6W
		PU04-RESISTORS (COMMON)
R***		CARBON FILM FIXED RESISTOR, ±5% 1/6W : RU01, RU02, RU04, RU06, RU07, RU09, (RU51~RU57, RU61, SR1040)
		PU04-SEMICONDUCTORS
DU01 ~ DU04	4822 130 33305	DIODE 1SS176, MA165, 1SS254
DU06 ~ DU09	4822 130 33305	DIODE 1SS176, MA165, 1SS254
DU51 ~ DU55	4822 130 33305	DIODE 1SS176, MA165, 1SS254 (SR1040)
QU02	4822 130 42715	TRANSISTOR 2SA608SP, 2SA1048, 2SA1309, 2SA933S
QU03	4822 130 61892	TRANSISTOR 2SD2144S (U, V)
QU04	4822 130 61189	DIGITAL TRANSISTOR DTC114TS
QU05	4822 130 61187	DIGITAL TRANSISTOR DTA144TS
QU06	4822 130 42682	DIGITAL TRANSISTOR DTA144ES/ UN4113
QU07	4822 130 42682	DIGITAL TRANSISTOR DTA144ES/ UN4113
QU08	4822 130 42594	DIGITAL TRANSISTOR DTC144ES/ UN4213
QU09	4822 130 42594	DIGITAL TRANSISTOR DTC144ES/ UN4213
QU10	4822 130 42682	DIGITAL TRANSISTOR DTA144ES/ UN4113
QU51	4822 209 63468	IC NJM082D (SR1040)
QU53	4822 130 60588	DIGITAL TRANSISTOR DTC114ES/ UN4211 (SR1040)
		PU04-MISCELLANEOUS
JU01		CONNECTOR, CARD FIT 27P
XU02	4822 242 72236	CRYSTAL 32.768KH2

REF. DESIG.	PART NO.	DESCRIPTION
		PU54-DISPLAY AND SWITCH CIRCUIT BOARD
		PU54-CAPACITORS
CU03	4822 126 10935	ELECT 100μF 6.3V
CU04	4822 122 40586	CERAMIC 0.1μF ±20% 25V
CU06	4822 122 31823	CERAMIC 15PF ±5% 50V
CU07	4822 122 31823	CERAMIC 15PF ±5% 50V
CU08	4822 124 41604	ELECT 0.1μF 50V
CU09	4822 124 80087	ELECT 220μF 6.3V
CU11	4822 122 40586	CERAMIC 0.01μF ±20% 25V
		PU54-RESISTORS
GU01	4822 111 92205	10KΩ X 4, ARRAY
GU02	4822 111 92204	10KΩ X 5, ARRAY
GU03	4822 111 92205	10KΩ X 4, ARRAY
		PU54-RESISTORS (COMMON)
R***		CARBON FILM FIXED RESISTOR, ±5% 1/6W : RU10, RU14~RU28, RU30
		PU54-SEMICONDUCTORS
QU01	4822 209 33823	U-COM TMP87CK70AF
QU12	4822 130 83519	PHOTO UNIT RPM-670CBR
		PU54-MISCELLANEOUS
SU01 ~ SU18	4822 276 20508	PUSH SWITCH, TACT
VU01	4822 130 91418	DISPLAY UNIT
XU01	4822 242 72066	CERAMIC RESONATOR, CST8.0MHZ
		PV04-MAIN FUNCTION CIRCUIT BOARD
		PV04-CAPACITORS
CA01	4822 125 60185	TRIMMING 20PF
CA02	4822 122 40589	CERAMIC 0.047μF ±20% 25V
CA03	4822 126 11553	CERAMIC 15PF ±5% 50V
CA04	5322 121 54128	FILM 390PF ±5% 50V
CA05	4822 126 10513	CERAMIC 47PF ±5% 50V
CA06	4822 122 40586	CERAMIC 0.01μF ±20% 25V
CA07	4822 122 40586	CERAMIC 0.01μF ±20% 25V
CA08	4822 125 60185	TRIMMING 20PF
CA09	4822 126 11553	CERAMIC 15PF ±5% 50V
CA11	4822 122 31349	CERAMIC 68PF ±5% 50V
CA12	4822 122 10367	CERAMIC 150PF ±5% 50V
CA13	4822 122 40586	CERAMIC 0.01μF ±20% 25V
CA18	4822 124 21894	ELECT 10μF 16V
CD01	4822 122 40586	CERAMIC 0.01μF ±20% 25V (SR1040)
CD02	4822 122 40586	CERAMIC 0.01μF ±20% 25V (SR1040)
CD04	4822 122 40586	CERAMIC 0.01μF ±20% 25V
CD05	4822 122 40586	CERAMIC 0.01μF ±20% 25V (SR1040)

REF. DESIG.	PART NO.	DESCRIPTION
CD06	4822 122 40586	CERAMIC 0.01µF ±20% 25V (SR1040)
CD07	4822 122 40586	CERAMIC 0.01µF ±20% 25V
CD08	4822 122 40586	CERAMIC 0.01µF ±20% 25V
CD09	4822 124 23052	ELECT 100µF 16V
CN01	4822 124 22571	ELECT 10µF 50V
CN02	4822 124 40786	ELECT 2.2µF 50V
CN03	4822 124 23056	ELECT 47µF 16V
CN04	4822 124 23056	ELECT 47µF 16V
CN05	4822 122 40617	CERAMIC 0.1µF +80% -20% 50V
CV05 ≀ CV16	4822 126 10408	CERAMIC 220PF ±10% 25V [/02]
CV17	4822 122 40617	CERAMIC 0.1µF +80% -20% 50V
CV19	4822 122 40617	CERAMIC 0.1µF +80% -20% 50V
CV21 ≀ CV26	4822 124 21894	ELECT 10µF 16V
CV27	4822 122 40617	CERAMIC 0.1µF +80% -20% 50V
CV28	4822 122 40617	CERAMIC 0.1µF +80% -20% 50V
C201	4822 122 40586	CERAMIC 0.01µF ±20% 25V
C202	4822 122 40586	CERAMIC 0.01µF ±20% 25V
C203	4822 122 40589	CERAMIC 0.047µF ±20% 25V
C204	4822 124 21894	ELECT 10µF 16V
C205	4822 122 40589	CERAMIC 0.047µF ±20% 25V
C206	4822 124 21982	ELECT 3.3µF 50V
C207	4822 124 23052	ELECT 100µF 16V
C208	4822 122 40589	CERAMIC 0.047µF ±20% 25V
C209	4822 124 23053	ELECT 1µF 50V
C210	5322 122 32072	CERAMIC 33pF ±5% 50V
C211	4822 124 23053	ELECT 1µF 50V
C212	4822 124 41604	ELECT 0.1µF 50V
C213	4822 124 23054	ELECT 0.47µF 50V
C214	4822 124 23057	ELECT 10µF 50V
C215	4822 122 40589	CERAMIC 0.047µF ±20% 25V
C217	5322 122 32143	CERAMIC 22µF ±5% 50V
C218	4822 124 23052	ELECT 100µF 16V
C301	4822 124 21982	ELECT 3.3µF 50V
C302	4822 124 21982	ELECT 3.3µF 50V
C305	4822 124 21982	ELECT 3.3µF 50V
C306	4822 124 21982	ELECT 3.3µF 50V
C307	4822 124 21894	ELECT 100µF 16V
C308	4822 124 21894	ELECT 100µF 16V
C501	4822 126 10513	CERAMIC 47PF ±5% 25V
C502	4822 126 10513	CERAMIC 47PF ±5% 25V
C503	4822 124 23052	ELECT 100µF 16V
C504	4822 122 40586	CERAMIC 0.01µF ±20% 25V
C505	4822 124 23053	ELECT 1µF 50V
C506	4822 124 41604	ELECT 0.1µF 50V
C507	4822 122 40586	CERAMIC 0.01µF ±20% 25V
C508	4822 124 23052	ELECT 100µF 16V
C509	5322 122 32265	CERAMIC 100PF ±5% SL 500V
C510	5322 122 32265	CERAMIC 100PF ±5% SL 500V
C511	4822 122 40586	CERAMIC 0.01µF ±20% 25V
C512	4822 122 40586	CERAMIC 0.01µF ±20% 25V
C701	4822 124 23057	ELECT 4.7µF 50V
C702	4822 124 23057	ELECT 4.7µF 50V
C705	5322 122 32072	CERAMIC 33pF ±5% 50V
C706	5322 122 32072	CERAMIC 33pF ±5% 50V

REF. DESIG.	PART NO.	DESCRIPTION
C707	4822 124 22571	ELECT 10µF 50V
C708	4822 124 22571	ELECT 10µF 50V
C711	4822 126 10797	CERAMIC 10PF 500V
C712	4822 126 10797	CERAMIC 10PF 500V
C713	4822 122 40103	CERAMIC 5PF ±0.25PF 50V
C714	4822 122 40103	CERAMIC 5PF ±0.25PF 50V
C717 ≀ C720	5322 122 32265	CERAMIC 100PF ±5% 500V
C721 ≀ C724	4822 124 21895	ELECT 0.22µF 50V
C725	4822 124 23052	ELECT 100µF 16V
C726	4822 124 22571	ELECT 10µF 50V
C735	4822 122 30043	CERAMIC 0.01µF +80% -20% 50V [/02]
C801	4822 122 40589	CERAMIC 0.047µF ±20% 25V
C802	4822 122 40589	CERAMIC 0.047µF ±20% 25V
C803	4822 124 22695	ELECT 2200µF 35V
C805	4822 124 21894	ELECT 10µF 50V
C806	4822 124 23057	ELECT 4.7µF 50V
C807	4822 124 21894	ELECT 10µF 50V
C808	4822 124 23056	ELECT 47µF 16V
C809	4822 124 22571	ELECT 10µF 50V
▲C811	4822 126 12453	CERAMIC 0.01µF +80%-20%500V
▲C812	4822 126 12866	ELECT 4700µF 50V
▲C813	4822 126 12866	ELECT 4700µF 50V
C814	4822 122 40589	CERAMIC 0.047µF ±20 25V
C815	4822 122 40589	CERAMIC 0.047µF ±20% 25V
C816	4822 124 22571	ELECT 10µF 50V
C***		**PV04-CAPACITORS (COMMON)** HIGH DIELECTRIC CONSTANT CERAMIC CAPACITOR, ±10% 50V: (CV01~CV04, CV29, CV30 [/02]), C703, C704, C709, C710
C***		PLASTIC FILM CAPACITOR ±5% 50V : CA15, CA16, CA17, C303, C304, (C309, C310 [/01])
C***		ELECTROLYTIC CAPACITOR, ±20% : C727, C728, C804, C817
		PV04-RESISTORS
RA11	4822 100 11351	10K Ω TRIMMING
▲RN19	4822 053 11271	270 Ω ±5% 2W
▲RN20	4822 053 11222	2.2K Ω ±5% 2W
▲RN22	4822 053 11271	270 Ω ±5% 2W
▲RV37	4822 052 10151	150 Ω ±5% 1/6W
▲RV38	4822 052 10151	150 Ω ±5% 1/6W
▲R103	4822 052 10109	10 Ω ±5% 1/6W
▲R207	4822 052 10101	100 Ω ±5% 1/6W
R211	4822 100 11373	4.7K Ω TRIMMING
R212	4822 100 11352	22K Ω TRIMMING
▲R313	4822 052 10151	150 Ω ±5% 1/6W
▲R314	4822 052 10151	150 Ω ±5% 1/6W

REF. DESIG.	PART NO.	DESCRIPTION
▲R512	4822 052 10221	220 Ω ±5% 1/6W
▲R713	4822 050 26809	68 Ω ±5% 1/6W
▲R714	4822 050 26809	68 Ω ±5% 1/6W
R719	4822 100 11386	1K Ω TRIMMING
R720	4822 100 11386	1K Ω TRIMMING
▲R725		
≀	4822 050 26809	68 Ω ±5% 1/6W
▲R730		
▲R731	4822 053 10221	220 Ω ±5% 1W
▲R732	4822 053 10221	220 Ω ±5% 1W
▲R733		
≀	4822 052 10109	10 Ω ±5% 1/6W
▲R736		
▲R737	4822 116 82049	0.18 Ω X 2 3W
▲R738	4822 116 82049	0.18 Ω X 2 3W
▲R739	4822 050 26809	68 Ω ±5% 1/6W
▲R740	4822 050 26809	68 Ω ±5% 1/6W
▲R743	4822 053 11109	10 Ω ±5% 2W
▲R744	4822 053 11109	10 Ω ±5% 2W
▲R745	4822 116 60263	3.3K Ω ±5% 1W
▲R747	4822 052 10221	220 Ω ±5% 1/6W
▲R748	4822 052 10221	220 Ω ±5% 1/6W
▲R751	4822 053 10331	330 Ω ±5% 1W
▲R752	4822 053 10331	330 Ω ±5% 1W
▲R801	4822 117 10158	1 Ω ±5% 1/4W
▲R802	4822 117 10158	1 Ω ±5% 1/4W
▲R808	4822 117 10002	2.2K Ω ±5% 1/2W
▲R809	4822 053 10221	220 Ω ±5% 1W
▲R810	4822 053 11688	6.8 Ω ±5% 2W
R***		**PV04-RESISTORS (COMMON)** CARBON FILM FIXED RESISTOR, ±5% 1/6W : RA01~RA04, RA06~RA10, (RD01, RD02 [SR1040]) RD03, RD04, RN01~RN18, RN21, RN31, RN32, RV01~RV36, RV41, RV42, RV45, RV46, R202~R206, R208~R210, R215~R217, R301,R302, R305~R312,R501~R504, R506, R507, R508 [/01], R509~R511, R703~R712, R715~R718, R721~R724, R746, R753, R804~R806
		PV04-SEMICONDUCTORS
DA01	4822 125 50416	VARICAP SVC342-K
DA02	4822 130 33697	DIODE 1SS135
DA03	4822 125 50416	VARICAP SVC342-K
DA04	4822 130 33697	DIODE 1SS135
DA05	4822 130 33305	DIODE 1SS176, MA165, 1SS254
DA06	4822 130 33305	DIODE 1SS176, MA165, 1SS254
DD01	4822 130 82609	ZENER DIODE MTZJ2.0B (SR1040)
DD02	4822 130 33759	ZENER DIODE 4.7V
DN01	4822 130 80837	DIODE HSS81
DN02	4822 130 80837	DIODE HSS81
DN04	4822 130 32508	DIODE RL103E / DSF10C
DN05	4822 130 33305	DIODE 1SS176, MA165, 1SS254
D501	4822 130 80317	ZENER DIODE 5.1V
D701	4822 130 80273	ZENER DIODE 8.2V
D702	4822 130 80322	ZENER DIODE 15V

REF. DESIG.	PART NO.	DESCRIPTION
D703		
≀	4822 130 33305	DIODE 1SS176, MA165, 1SS254
D706		
▲D801		
≀	4822 130 32508	DIODE RL103E / DSF10C
▲D806		
▲D807	4822 130 80838	ZENER DIODE 18V
▲D808	4822 130 32508	DIODE RL103E / DSF10C
▲D809	4822 130 80091	ZENER DIODE 12V
▲D810	4822 130 32508	DIODE RL103E / DSF10C
▲D811	4822 130 31007	DIODE S4VB20
QA01	4822 130 42298	TRANSISTOR 2SC536SP, 2SC2458, 2SC3311, 2SC1740S
QA02	4822 130 42298	TRANSISTOR 2SC536SP, 2SC2458, 2SC3311, 2SC1740S
QA03	4822 130 61892	TRANSISTOR 2SD2144S (U, V)
QA04	4822 130 42682	DIGITAL TRANSISTOR DTA144ES/ UN4113
QA05	4822 130 42682	DIGITAL TRANSISTOR DTA144ES/ UN4113
QD01	4822 209 30193	IC LB1641
QD02	4822 209 30193	IC LB1641
QN01	4822 130 43233	TRANSISTOR 2SC2240
QN02	4822 130 43233	TRANSISTOR 2SC2240
QN03	4822 130 42951	TRANSISTOR 2SA970
QN04	4822 209 83312	IC TA7317P
QN05	4822 130 60588	DIGITAL TRANSISTOR DTC114ES/ UN4211
QV01	4822 209 72748	IC LC7821
QV03	4822 130 60588	DIGITAL TRANSISTOR DTC114ES/ UN4211
QV04	4822 130 60766	DIGITAL TRANSISTOR DTA114ES/ UN4111
QV05	4822 130 61892	TRANSISTOR 2SD2144S (U, V)
QV06	4822 130 61892	TRANSISTOR 2SD2144S (U, V)
QV07	4822 209 83631	IC NJM4558D-D
Q201	4822 209 31001	IC LA1851N
Q202	4822 130 62294	TRANSISTOR 2C1809S (P)
Q203	4822 130 42682	DIGITAL TRANSISTOR DTA144ES/ UN4113
Q204	4822 130 60766	DIGITAL TRANSISTOR DTA114ES/ UN4111
Q205	4822 126 90006	POSISTOR PTH59F04BH222TS
Q206	4822 130 42298	TRANSISTOR 2SC536SP, 2SC2458, 2SC3311, 2SC1740S
Q301	4822 209 83631	IC NJM4558D-D
Q501	4822 209 30178	IC LC7218
Q502	4822 130 42121	F.E.T. 2SK30A (Y)
Q503	4822 130 42298	TRANSISTOR 2SC536SP, 2SC2458, 2SC3311, 2SC1740S
Q701	4822 130 42951	TRANSISTOR 2SA970 (GR, BL)
Q702	4822 130 42951	TRANSISTOR 2SA970 (GR, BL)
Q703	4822 130 43233	TRANSISTOR 2SC2240
Q704	4822 130 43233	TRANSISTOR 2SC2240
▲Q705	4822 130 60117	TRANSISTOR 2SC3419 (Y)
▲Q706	4822 130 60117	TRANSISTOR 2SC3419 (Y)
▲Q707	4822 130 62335	TRANSISTOR 2SD2033 (E)
▲Q708	4822 130 62335	TRANSISTOR 2SD2033 (E)
▲Q709	4822 130 62334	TRANSISTOR 2SB1353 (E)
▲Q710	4822 130 62334	TRANSISTOR 2SB1353 (E)

REF. DESIG.	PART NO.	DESCRIPTION
▲Q711	4822 130 60697	TRANSISTOR 2SC3180N (R, O)
▲Q712	4822 130 60697	TRANSISTOR 2SC3180N (R, O)
▲Q713	4822 130 60694	TRANSISTOR 2SA1263N (R, O)
▲Q714	4822 130 60694	TRANSISTOR 2SA1263N (R, O)
▲Q717	4822 209 83732	IC AN7062
▲Q801	4822 209 60826	IC NJM7812FA
▲Q802	4822 209 32514	IC L78MR06
		PV04-MISCELLANEOUS
A101	4822 210 10568	V.H.F. TUNER, FRONT END [/01]
A101	4822 210 10567	V.H.F. TUNER, FRONT END [/02]
FA01	4822 242 81262	CERAMIC FILTER SFP450F
F201	4822 242 70665	CERAMIC FILTER SFE10.7MS3-A
F202	4822 242 70665	CERAMIC FILTER SFE10.7MS3-A
JV01	4822 267 31451	TERMINAL 8P
JV02	4822 267 31451	TERMINAL 8P
JV03	4822 267 41009	TERMINAL 2P
JV04		JACK, CARD FIT 27P
J101	4822 290 81632	TERMINAL ANTENNA
LA01	4822 157 63084	ANT COIL MW
LA02	4822 157 70779	OSC COIL MW
LA03	4822 157 52714	ANT COIL LW
LA04	4822 157 70781	OSC COIL LW
LA05	4822 157 53589	CHOKE COIL 39mH
LA06	4822 148 81095	I.F.T. COIL AM
LN02	4822 280 20469	RELAY SVR-24A
L201	4822 157 63904	I.F.T. COIL FM DET
L202	4822 156 10794	M.P.X. COIL [/ 02]
L301	4822 157 70021	M.P.X. COIL 19.38KHz
L302	4822 157 70021	M.P.X. COIL 19.38KHz
L701	4822 157 70022	SPEAKER CHOKE COIL
L702	4822 157 70022	SPEAKER CHOKE COIL
SV01	4822 277 21718	SLIDE SWITCH SYSTEM / INT/ EXT
S301	4822 277 21712	SLIDE SWITCH SCAN STEP [/01]
WV01		JAMPER LEAD, SUM-CARD 27P
X201	4822 242 81608	CERAMIC RESONATOR, CSB456F33
X501	4822 242 72333	CRYSTAL 7.2MHZ
		PV64-SPEAKER TERMINAL CIRCUIT BOARD
C729	4822 122 30043	CERAMIC CAP. 0.01μF +80% -20% 50V [/ 02]
C730	4822 122 30043	CERAMIC CAP. 0.01μF +80% -20% 50V [/ 02]
C733	4822 122 30043	CERAMIC CAP. 0.01μF +80% -20% 50V [/ 02]
C734	4822 122 30043	CERAMIC CAP. 0.01μF +80% -20% 50V [/ 02]
DN03	4822 130 32508	DIODE RL103E / DSF10C
J701	4822 290 81646	TERMINALL 4P SPEAKER
▲LN01	4822 280 70354	RELAY VB24MBU

NOTE ON SAFETY:
Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ▲. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.